

Kavram'ın Sevgili Öğrencileri,

Elinizdeki kitap ders sırasında size bol örnek çözdürmek, soru tiplerini ve tekniğini öğretmek amacıyla hazırlanmıştır.

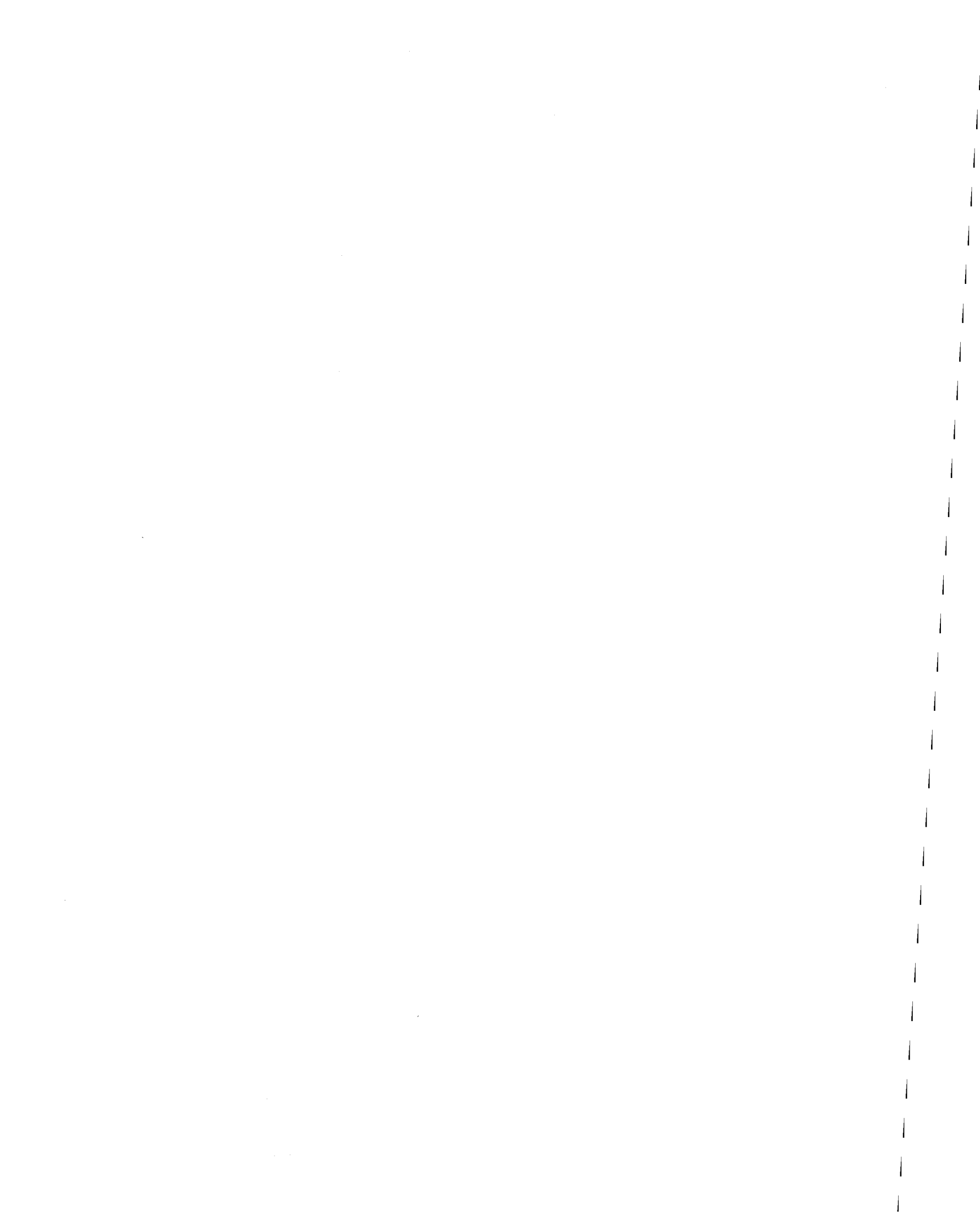
Bu kitabı yeni ÖSS sistemine göre düzenledik. Kitap yeni ÖSS'nin tüm konularıyla ilgili soruları içermektedir. Sorular konunun anlatım sırasına uygun olarak kolaydan zora doğru sıralanmıştır.

Bu kitapla,

- Bilgi eksiğini gidermeyi, pratiğinizi arttırmayı*
- Sizi soru yazma sıkıntısından kurtarmayı*
- Özellikle "üniversiteyi" kazandırmayı amaçladık.*

Bizim için başarı, sizin başarmanızdır.

KAVRAM YAYINLARI



İÇİNDEKİLER

KONULAR

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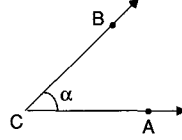
AÇILAR

KONU
1

Açı: Başlangıç noktaları ortak iki ışının birleşimidir.

$$[CB \cup [CA = \widehat{BCA} = \widehat{ACB} = \widehat{C}$$

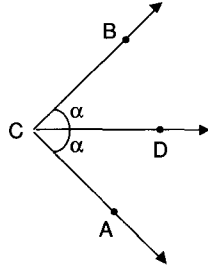
$$\widehat{ACB} \text{ açısının ölçüsü } m(\widehat{ACB}) = \alpha$$



Açıortay: Açığı iki eş açığa bölen ışın

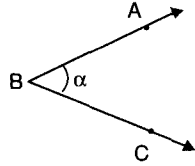
$$m(\widehat{BCD}) = m(\widehat{DCA}) = \alpha$$

[CD , $\widehat{BCA}$ nın açıortayı

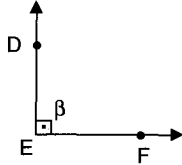


Ölçüsüne göre açı çeşitleri:

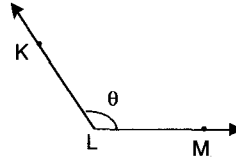
$$\alpha < 90^\circ \Leftrightarrow \widehat{ABC} \text{ Dar açı}$$



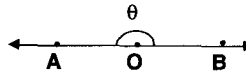
$$\beta = 90^\circ \Leftrightarrow \widehat{DEF} \text{ Dik açı}$$



$$90^\circ < \theta \Leftrightarrow \widehat{KLM} \text{ Geniş açı}$$



$$\theta = 180^\circ \Leftrightarrow \widehat{AOB} \text{ Doğru açı}$$



Ölçüleri arasındaki bağıntılara göre açı çeşitleri:

$\alpha + \beta = 90^\circ$ ise α ile β tümler iki açıdır.

α nın tümleyeni $90^\circ - \alpha$ dir.

$x + y = 180^\circ$ ise x ile y bütünler iki açıdır.

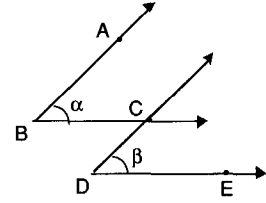
x in bütünleri $180^\circ - x$ dir.

Kenarları aynı yönde paralel açılar eşittir.

[BA // [DC ve

[BC // [DE ise

$\alpha = \beta$ dir.

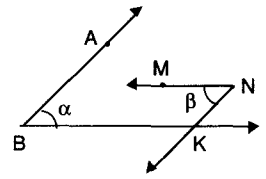


Kenarları ters yönde paralel açılar eşittir.

[BA // [NK ve

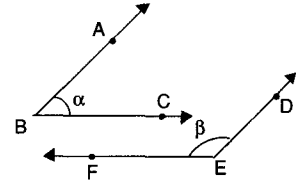
[NM // [BK ise

$\alpha = \beta$ dir.

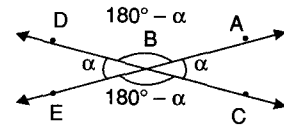


Birer kenarları aynı yönde diğer kenarları ters yönde paralel açılar bütünlerdir.

$$\alpha + \beta = 180^\circ \text{ dir.}$$



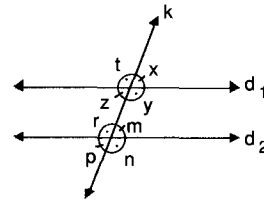
Ters açılar eşittir.



$$m(\widehat{ABC}) = m(\widehat{DBE}) = \alpha$$

$$m(\widehat{ABD}) = m(\widehat{CBE}) = 180^\circ - \alpha$$

Paralel iki doğruyu bunlara paralel olmayan üçüncü bir doğru keserse;



İçters açılar eş olur $y = r$, $m = z$

Dışters açılar eş olur $x = p$, $t = n$

Karşı durumlu açılar bütünler olur.

$y + m = 180^\circ$, $z + r = 180^\circ$ dir.

KAVRAM YAYINLARI

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AÇILAR

TEST
1

- 1) 38200 saniyelik açının eşiti kaç derece, dakika, saniyedir?

- A) $1^{\circ} 36' 40''$ B) $10^{\circ} 36' 40''$
C) $11^{\circ} 46' 4''$ D) $12^{\circ} 4' 40''$
E) $10^{\circ} 4' 44''$

- 2) $a = 36^{\circ}$

$$b = \frac{\pi}{9}$$

$c = 30$ grad ise

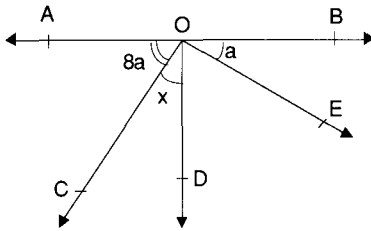
aşağıdaki sıralamalardan hangisi doğrudur?

- A) $a > b > c$ B) $a > c > b$ C) $b > c > a$
D) $b > a > c$ E) $c > b > a$

- 3) α açısının tümlerinin bütünlerine oranı $\frac{2}{5}$ ise α açısı kaç derecedir?

- A) 20 B) 30 C) 40
D) 50 E) 60

4)



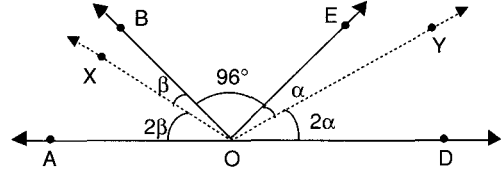
Şekilde $[OD \perp AB]$, $[OC \perp OE]$

$m(\widehat{BOE}) = a$, $m(\widehat{AOC}) = 8a$ ise

$m(\widehat{COD}) = x$ kaç derecedir?

- A) 10 B) 20 C) 25
D) 30 E) 36

5)



Şekilde A, O, D doğrusal noktalar

$m(\widehat{AOX}) = 2\beta$, $m(\widehat{XOB}) = \beta$,

$m(\widehat{EOY}) = \alpha$, $m(\widehat{DOY}) = 2\alpha$ ve

$m(\widehat{BOE}) = 96^{\circ}$ ise

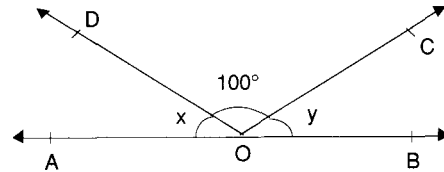
$m(\widehat{XOY})$ kaç derecedir?

- A) 104 B) 114 C) 124
D) 126 E) 128

KAVRAM YAYINLARI

KAVRAM YAYINLARI

6)



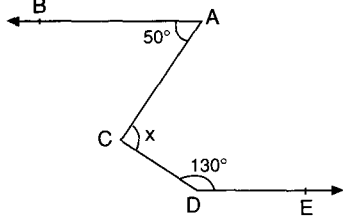
Şekilde A, O, B noktaları doğrusal,

$x \neq y$ ve $(x - 2y)^2 = y^2$ ise

y kaç derecedir?

- A) 18 B) 20 C) 24
D) 30 E) 40

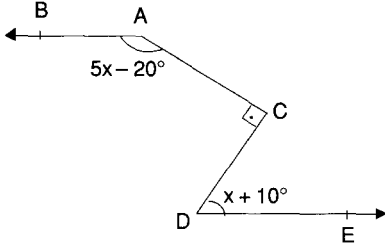
7)



Şekilde $[AB \parallel DE]$
 $m(\widehat{BAC}) = 50^\circ$ ve $m(\widehat{CDE}) = 130^\circ$ ise
 $m(\widehat{ACD}) = x$ kaç derecedir?

- A) 80 B) 90 C) 100
 D) 105 E) 110

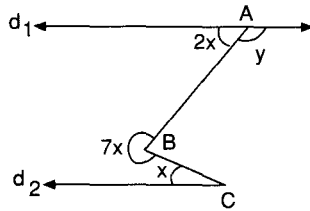
8)



Şekilde $[AC \perp DC]$, $[AB \parallel DE]$,
 $m(\widehat{BAC}) = 5x - 20^\circ$ ve $m(\widehat{CDE}) = x + 10^\circ$ ise
 x kaç derecedir?

- A) 15 B) 18 C) 20
 D) 30 E) 36

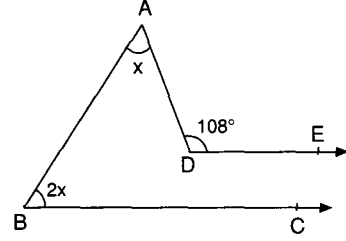
9)



Şekilde $d_1 \parallel d_2$ ise
 Verilenlere göre y kaç derecedir?

- A) 96 B) 102 C) 108
 D) 144 E) 150

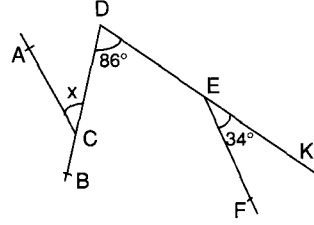
10)



Şekilde $[BC \parallel DE]$,
 $m(\widehat{ADE}) = 108^\circ$, $m(\widehat{BAD}) = x$ ve
 $m(\widehat{ABC}) = 2x$ ise x kaç derecedir?

- A) 72 B) 54 C) 48
 D) 45 E) 36

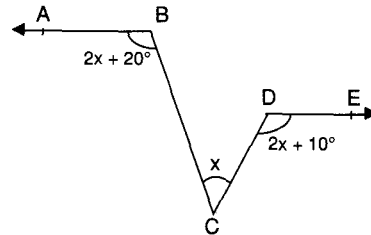
11)



Şekilde $[CA \parallel EF]$,
 $m(\widehat{BDK}) = 86^\circ$ ve $m(\widehat{FEK}) = 34^\circ$ ise
 $m(\widehat{ACD}) = x$ kaç derecedir?

- A) 36 B) 42 C) 48
 D) 52 E) 56

12)



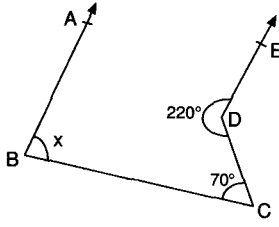
Şekilde $[BA \parallel DE]$ ise x kaç derecedir?

- A) 10 B) 20 C) 30
 D) 40 E) 50

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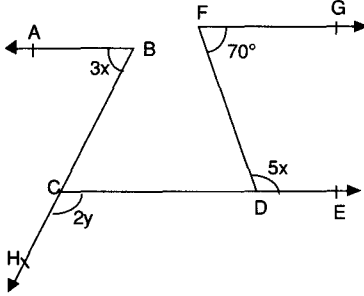
1)



Şekilde $[BA \parallel DE]$,
 $m(\widehat{DCB}) = 70^\circ$ ve
 $m(\widehat{EDC}) = 220^\circ$ ise
 $m(\widehat{ABC}) = x$ kaç
 derecedir?

- A) 40 D) 70 B) 50 C) 60
E) 80

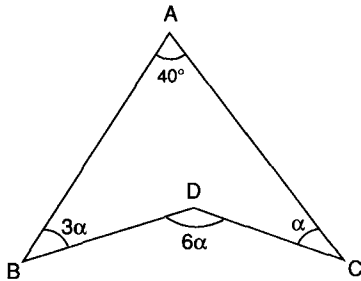
2)



Şekilde $[BA \parallel FG \parallel CE]$,
 $m(\widehat{GFD}) = 70^\circ$, $m(\widehat{FDE}) = 5x$,
 $m(\widehat{ABH}) = 3x$ ve $m(\widehat{DCH}) = 2y$ ise
 y kaç derecedir?

- A) 55 D) 58 B) 56 C) 57
E) 59

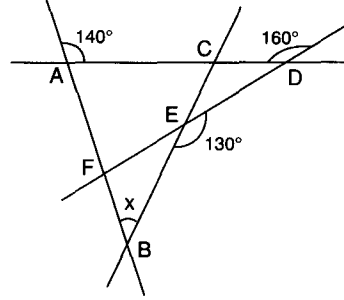
3)



Şekilde verilenlere göre
 $m(\widehat{ABD})$ kaç derecedir?

- A) 30 D) 75 B) 60 C) 70
E) 80

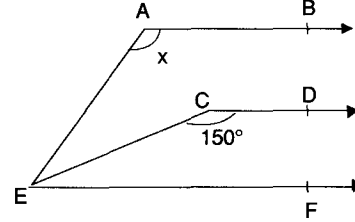
4)



Şekilde verilen-
 lere göre x
 kaç derece-
 dir?

- A) 40 D) 80 B) 60 C) 70
E) 84

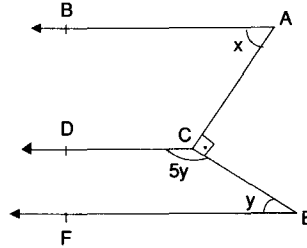
5)



Şekilde $[AB \parallel CD \parallel EF]$,
 $m(\widehat{ECD}) = 150^\circ$ ve $m(\widehat{AEC}) = \frac{3}{2} m(\widehat{CEF})$ ise
 $m(\widehat{BAE}) = x$ kaç derecedir?

- A) 100 D) 115 B) 105 C) 110
E) 120

6)



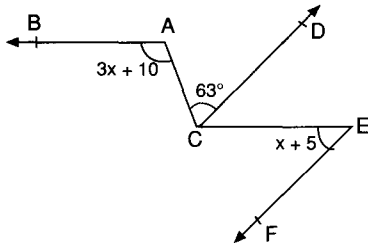
Şekilde $[AB \parallel CD \parallel EF]$, $[AC] \perp [CE]$ ise
 diğer verilenlere göre x kaç derecedir?

- A) 40 D) 55 B) 45 C) 50
E) 60

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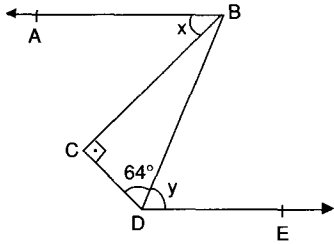
7)



Şekilde $[AB \parallel CE]$, $[CD \parallel EF]$,
 $m(\widehat{BAC}) = 3x + 10^\circ$, $m(\widehat{ACD}) = 63^\circ$ ve
 $m(\widehat{CEF}) = x + 5^\circ$ ise **x kaç derecedir?**

- A) 33 B) 32 C) 31
 D) 30 E) 29

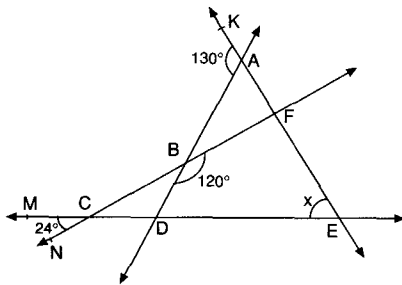
8)



Şekilde $[BA \parallel DE]$, $[BC] \perp [CD]$,
 $m(\widehat{ABC}) = x$, $m(\widehat{BDE}) = y$ ve
 $x + y = 86^\circ$ ise **x kaç derecedir?**

- A) 26 B) 30 C) 36
 D) 48 E) 56

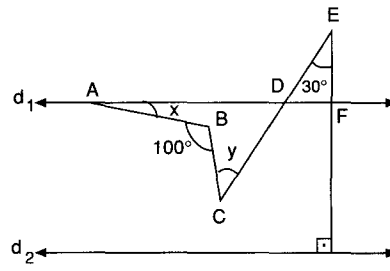
9)



Şekilde $m(\widehat{KAD}) = 130^\circ$, $m(\widehat{DBF}) = 120^\circ$ ve
 $m(\widehat{NCM}) = 24^\circ$ ise
 $m(\widehat{MEK}) = x$ kaç derecedir?

- A) 24 B) 30 C) 36
 D) 46 E) 48

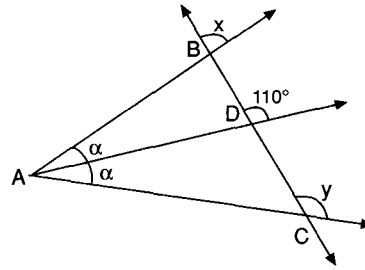
10)



Şekilde $d_1 \parallel d_2$ ise verilenlere göre
x + y kaç derecedir?

- A) 5 B) 10 C) 20
 D) 30 E) 40

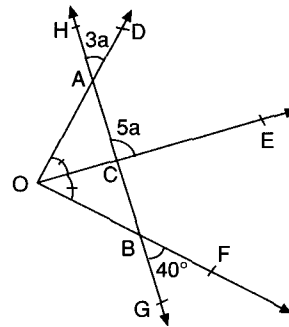
11)



Şekilde verilenlere göre
x + y kaç derecedir?

- A) 200 B) 210 C) 220
 D) 230 E) 240

12)



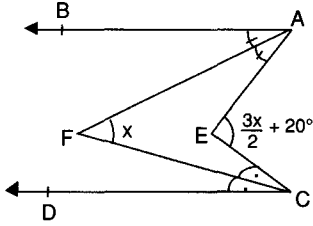
Şekilde $[OE \parallel OF]$ açısının açıortayı
 $m(\widehat{HAD}) = 3a$, $m(\widehat{HCE}) = 5a$ ve
 $m(\widehat{FBG}) = 40^\circ$ ise **a kaç derecedir?**

- A) 5 B) 10 C) 15
 D) 20 E) 30

KAVRAM YAYINLARI

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1)

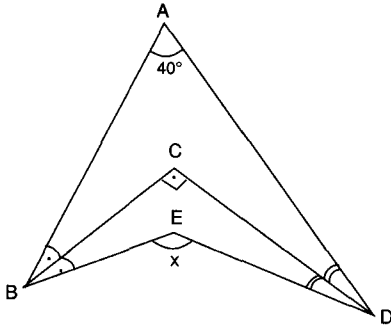


Şekilde $[AB] \parallel [CD]$ ve $[AF]$, $[CE]$ açkırtaylar ve $m(\widehat{AEC}) = \frac{3x}{2} + 20^\circ$ ise

$m(\widehat{AFC}) = x$ kaç derecedir?

- A) 30 B) 35 C) 40
D) 42 E) 60

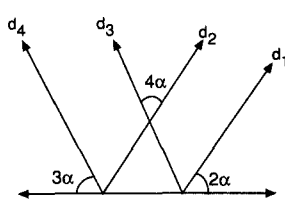
2)



Şekilde $[BC]$ ve $[CE]$ açkırtaylar, $m(\widehat{BAD}) = 40^\circ$ ve $m(\widehat{BCD}) = 90^\circ$ ise $m(\widehat{BED}) = x$ kaç derecedir?

- A) 110 B) 120 C) 130
D) 140 E) 150

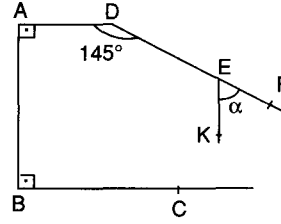
3)



- A) 10 B) 15 C) 20
D) 25 E) 30

Şekilde $d_1 \parallel d_2$ ve $d_3 \parallel d_4$ ise verilen ölçülere göre α kaç derecedir?

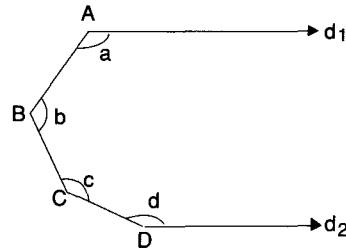
4)



Şekilde $[AD] \parallel [BC]$, $m(\widehat{ADF}) = 145^\circ$, $[AB] \perp [BC]$ ve $[EK] \parallel [AB]$ ise $m(\widehat{KEF}) = \alpha$ kaç derecedir?

- A) 30 B) 40 C) 50
D) 55 E) 65

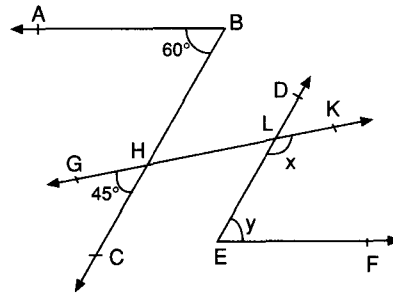
5)



Şekilde $d_1 \parallel d_2$ ise $a + b + c + d$ kaç derecedir?

- A) 360 B) 420 C) 540
D) 720 E) 900

6)



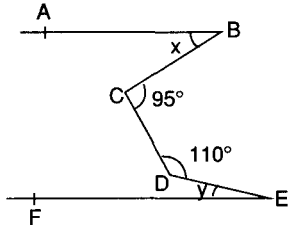
Şekilde $[BC] \parallel [ED]$, $[BA] \parallel [EF]$, $m(\widehat{ABC}) = 60^\circ$, $m(\widehat{GHC}) = 45^\circ$, $m(\widehat{KLE}) = x^\circ$ ve $m(\widehat{DEF}) = y^\circ$ ise $x + y$ kaç derecedir?

- A) 180 B) 195 C) 205
D) 210 E) 215

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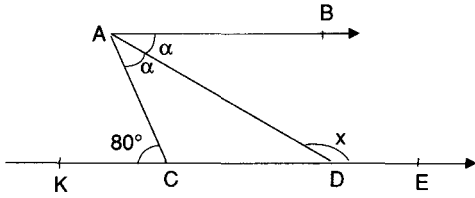
7)



Şekilde $[BA \parallel [EF$,
 $m(\widehat{BCD}) = 95^\circ$ ve $m(\widehat{CDE}) = 110^\circ$ ise
 $m(\widehat{ABC}) + m(\widehat{DEF}) = x + y$ kaç derecedir?

- A) 45 D) 30 B) 40 E) 25 C) 35

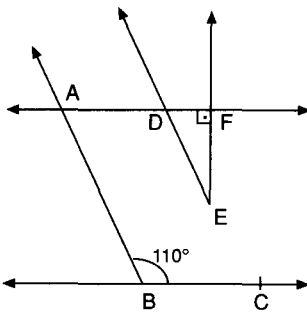
8)



Şekilde $[AB \parallel [KE$,
 $m(\widehat{ACK}) = 80^\circ$ ve $m(\widehat{BAD}) = m(\widehat{CAD})$ ise
 $m(\widehat{ADE}) = x$ kaç derecedir?

- A) 120 D) 138 B) 126 E) 140 C) 130

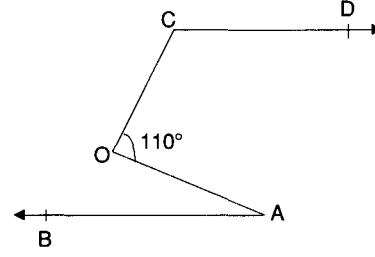
9)



Şekilde
 $AF \parallel BC$,
 $[BA \parallel [ED$,
 $AF \perp [EF$ ve
 $m(\widehat{ABC}) = 110^\circ$ ise
 $m(\widehat{DEF})$ kaç de-
 recedir?

- A) 5 D) 20 B) 10 E) 25 C) 15

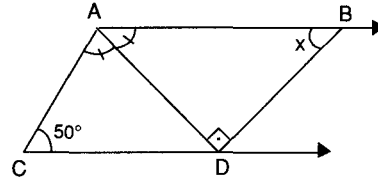
10)



Şekilde $[AB \parallel [CD$ ve $m(\widehat{AOC}) = 110^\circ$ ise
 $m(\widehat{OCD}) - m(\widehat{OAB})$ kaç derecedir?

- A) 40 D) 70 B) 50 E) 80 C) 60

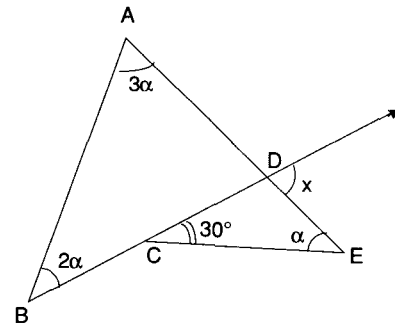
11)



Şekilde $[AB \parallel [CD$, $[AD]$ açıortay ,
 $[AD] \perp [DB]$ ve $m(\widehat{ACD}) = 50^\circ$ ise
 $m(\widehat{ABD}) = x$ kaç derecedir?

- A) 40 D) 25 B) 35 E) 15 C) 30

12)



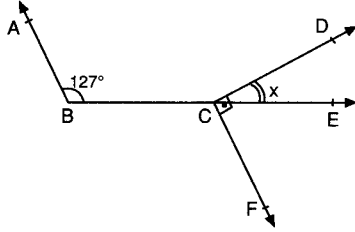
Şekilde verilenlere göre x kaç derecedir?

- A) 40 D) 55 B) 45 E) 60 C) 50

KAVRAM YAYINLARI

KAVRAM YAYINLARI

1)



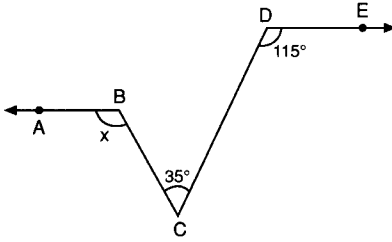
Şekilde $[BA \parallel CF]$, $[CD \perp CF]$ ve

$m(\widehat{ABE}) = 127^\circ$ ise

$m(\widehat{ECD}) = x$ kaç derecedir?

- A) 37 B) 43 C) 54 D) 66 E) 70

2)



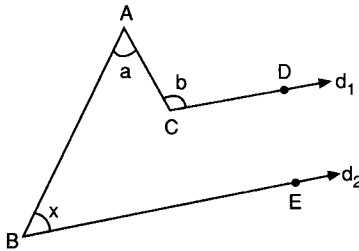
Şekilde $[BA \parallel DE]$,

$m(\widehat{CDE}) = 115^\circ$ ve $m(\widehat{BCD}) = 35^\circ$ ise

$m(\widehat{ABC}) = x$ kaç derecedir?

- A) 95 B) 100 C) 110 D) 115 E) 120

3)

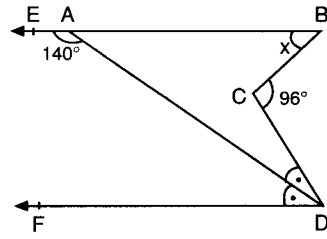


Şekilde $d_1 \parallel d_2$, $m(\widehat{BAC}) = a$ ve

$m(\widehat{ACD}) = b$ ise $m(\widehat{ABE}) = x$ in a ve b türünden eşiti aşağıdakilerden hangisidir?

- A) $a + b$ B) $a - b$ C) $b - a$
D) $2a + b$ E) $2b - 3a$

4)



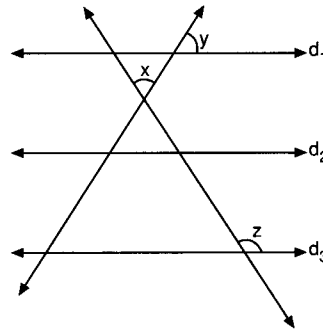
Şekilde $[BE \parallel DF]$, $[AD]$ açıortay,

$m(\widehat{EAD}) = 140^\circ$ ve $m(\widehat{BCD}) = 96^\circ$ ise

$m(\widehat{EBC}) = x$ kaç derecedir?

- A) 46 B) 24 C) 16 D) 15 E) 10

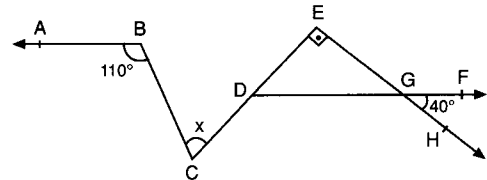
5)



Şekilde $d_1 \parallel d_2 \parallel d_3$ ise x, y, z arasındaki bağıntı aşağıdakilerden hangisidir?

- A) $z = x + y$ B) $z = 2x + y$ C) $z - x = 3y$
D) $z + y = 4x$ E) $2z = 3x + 3y$

6)



Şekilde $[BA \parallel DF]$, $[CE] \perp [EH]$,

$m(\widehat{ABC}) = 110^\circ$ ve $m(\widehat{FGH}) = 40^\circ$ ise

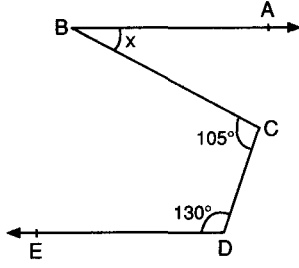
$m(\widehat{BCE}) = x$ kaç derecedir?

- A) 45 B) 50 C) 55 D) 60 E) 65

KAVRAM YAYINLARI

KAVRAM YAYINLARI

7)

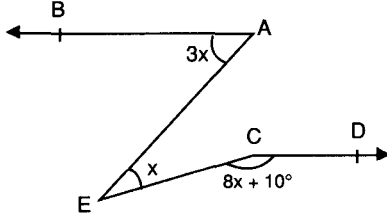


Şekilde $[BA \parallel DE]$,
 $m(\widehat{BCD}) = 105^\circ$ ve $m(\widehat{CDE}) = 130^\circ$ ise

$m(\widehat{ABC}) = x$ kaç derecedir?

- A) 30 B) 35 C) 40 D) 45 E) 55

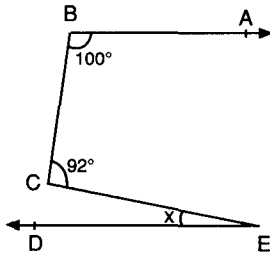
8)



Şekilde $[AB \parallel CD]$,
 $m(\widehat{BAE}) = 3x$ ve $m(\widehat{ECD}) = 8x + 10^\circ$ ise
 $m(\widehat{AEC}) = x$ kaç derecedir?

- A) 21 B) 20 C) 19 D) 18 E) 17

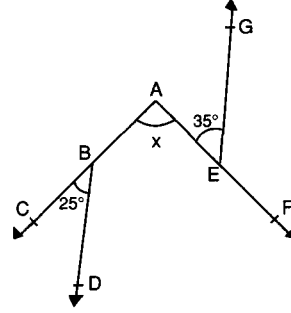
9)



Şekilde $[BA \parallel ED]$, $m(\widehat{ABC}) = 100^\circ$ ve
 $m(\widehat{BCE}) = 92^\circ$ ise
 $m(\widehat{CED}) = x$ kaç derecedir?

- A) 15 B) 13 C) 12 D) 10 E) 8

10)

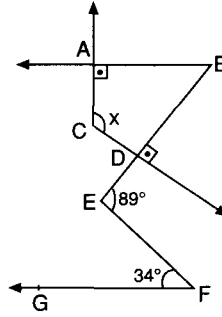


Şekilde $[BD \parallel EG]$
 $m(\widehat{CBD}) = 25^\circ$ ve $m(\widehat{AEG}) = 35^\circ$ ise

$m(\widehat{CAF}) = x$ kaç derecedir?

- A) 45 B) 50 C) 55 D) 60 E) 65

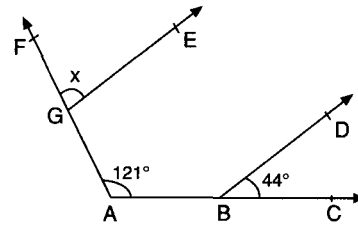
11)



Şekilde $[BA \parallel FG]$,
 $[CA \perp BA]$,
 $[CD \perp EB]$,
 $m(\widehat{BEF}) = 89^\circ$ ve
 $m(\widehat{EFG}) = 34^\circ$ ise
 $m(\widehat{ACD}) = x$ kaç de-
 recedir?

- A) 110 B) 115 C) 120 D) 125 E) 130

12)



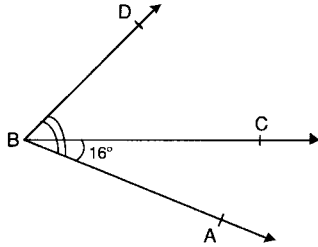
Şekilde $[GE \parallel BD]$,
 $m(\widehat{FAC}) = 121^\circ$ ve $m(\widehat{DBC}) = 44^\circ$ ise
 $m(\widehat{FGE}) = x$ kaç derecedir?

- A) 68 B) 69 C) 72 D) 74 E) 77

KAVRAM YAYINLARI

KAVRAM YAYINLARI

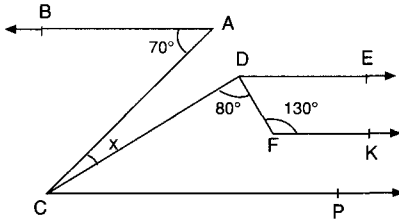
1)



Şekilde $m(\widehat{ABC}) = 16^\circ$ ve $m(\widehat{ABD}) = 76^\circ$ ise
ABC ile ABD açılarının açkıortayları arasındaki açı kaç derecedir?

- A) 20 B) 22 C) 28 D) 30 E) 32

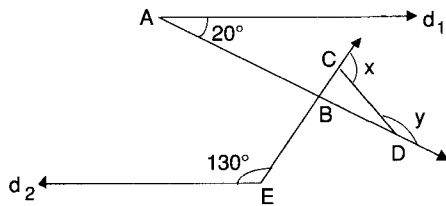
2)



Şekilde $[AB \parallel [DE \parallel [FK \parallel [CP$,
 $m(\widehat{BAC}) = 70^\circ$, $m(\widehat{CDF}) = 80^\circ$ ve
 $m(\widehat{DFK}) = 130^\circ$ ise
 $m(\widehat{ACD}) = x$ kaç derecedir?

- A) 15 B) 20 C) 25 D) 30 E) 35

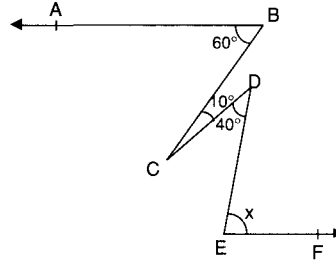
3)



Şekilde $d_1 \parallel d_2$ ise verilen ölçülere göre
 $x + y$ kaç derecedir?

- A) 220 B) 250 C) 260 D) 280 E) 300

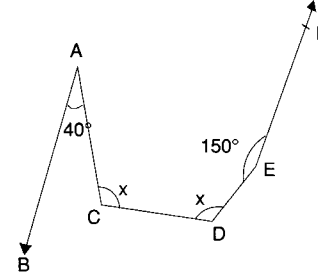
4)



Şekilde $[BA \parallel [EF$,
 $m(\widehat{ABC}) = 60^\circ$, $m(\widehat{BCD}) = 10^\circ$ ve
 $m(\widehat{CDE}) = 40^\circ$ ise
 $m(\widehat{DEF}) = x$ kaç derecedir?

- A) 70 B) 80 C) 90 D) 100 E) 110

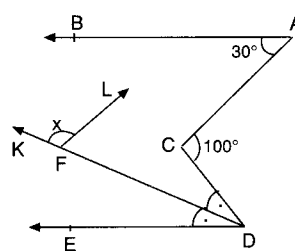
5)



Şekilde $[AB \parallel [EF$,
 $m(\widehat{BAC}) = 40^\circ$ ve $m(\widehat{DEF}) = 150^\circ$ ise
 $m(\widehat{ACD}) = m(\widehat{CDE}) = x$ kaç derecedir?

- A) 105 B) 115 C) 120 D) 125 E) 130

6)



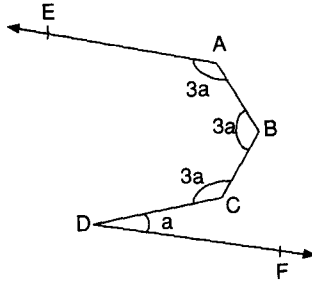
Şekilde
 $[AB \parallel [DE$,
 $[FL \parallel [AC$,
 $m(\widehat{BAC}) = 30^\circ$,
 $m(\widehat{ACD}) = 100^\circ$ ve
 $[DK$ açkıortay ise
 $m(\widehat{KFL}) = x$ kaç derecedir?

- A) 100 B) 105 C) 110 D) 115 E) 120

KAVRAM YAYINLARI

KAVRAM YAYINLARI

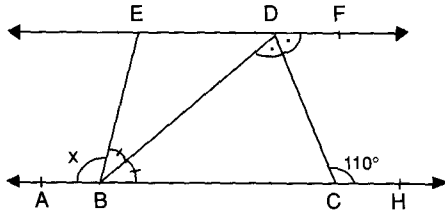
7)



Şekilde $[AE] \parallel [DF]$ ise verilenlere göre a kaç derecedir?

- A) 15 B) 20 C) 25 D) 35 E) 45

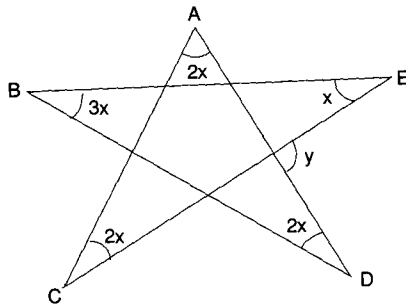
8)



Şekilde $EF \parallel AH$, $[BD]$ EBC açısının $[DC]$ BDF açısının açıortayı ve $m(\widehat{DCH}) = 110^\circ$ ise $m(\widehat{ABE}) = x$ kaç derecedir?

- A) 120 B) 110 C) 100 D) 80 E) 70

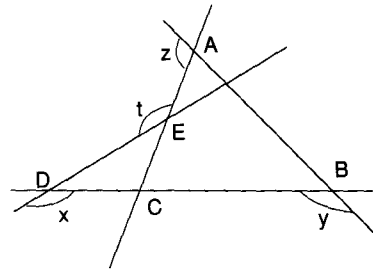
9)



Şekildeki beş köşeli yıldızda y ile gösterilen açı kaç derecedir?

- A) 90 B) 96 C) 102 D) 108 E) 110

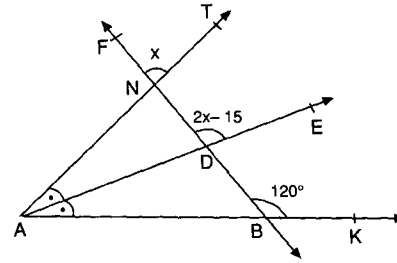
10)



Şekilde x, y, z, t ilgili açılarının ölçüleri ve $t > 90^\circ$ ise $x + y + z$ toplamının en büyük tamsayı değeri kaçtır?

- A) 540 B) 539 C) 450 D) 449 E) 361

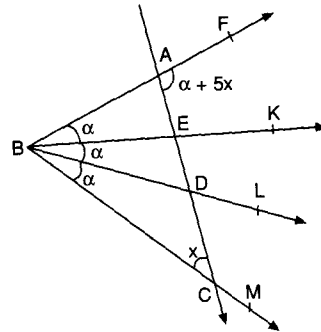
11)



Şekilde $m(\widehat{TAE}) = m(\widehat{EAK})$, $m(\widehat{FNT}) = x$, $m(\widehat{NDE}) = 2x - 15$ ve $m(\widehat{DBK}) = 120^\circ$ ise x kaç derecedir?

- A) 30 B) 40 C) 45 D) 50 E) 60

12)



Şekildeki verilere göre α nın x türünden eşiti aşağıdakilerden hangisidir?

- A) $2x$ B) x C) $\frac{x}{2}$ D) $\frac{2x}{3}$ E) $\frac{2x}{5}$

KAVRAM YAYINLARI

KAVRAM YAYINLARI

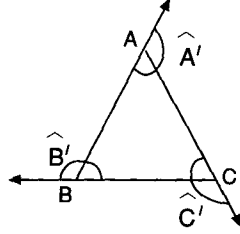


ÜÇGENDE AÇILAR

KONU
2

İç açılar $\widehat{A}$, $\widehat{B}$, $\widehat{C}$

Dış açılar $\widehat{A'}$, $\widehat{B'}$, $\widehat{C'}$



İç açılarının toplamı 180° dir.

$$m(\widehat{A}) + m(\widehat{B}) + m(\widehat{C}) = 180^\circ$$

Dış açılarının toplamı 360° dir.

$$m(\widehat{A'}) + m(\widehat{B'}) + m(\widehat{C'}) = 360^\circ$$

Aynı köşedeki iç ve dış açı bütünlerdir.

$$m(\widehat{A}) + m(\widehat{A'}) = 180^\circ$$

$$m(\widehat{B}) + m(\widehat{B'}) = 180^\circ$$

$$m(\widehat{C}) + m(\widehat{C'}) = 180^\circ$$

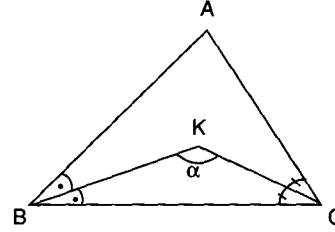
Bir dış açının ölçüsü, üçgenin diğer iki köşesindeki iç açılarının ölçüleri toplamına eşittir.

$$m(\widehat{A'}) = m(\widehat{B}) + m(\widehat{C})$$

$$m(\widehat{B'}) = m(\widehat{A}) + m(\widehat{C})$$

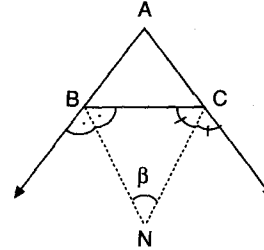
$$m(\widehat{C'}) = m(\widehat{A}) + m(\widehat{B})$$

Üçgende açıortaylar arasındaki açı
İki iç açıortay arasındaki açı:



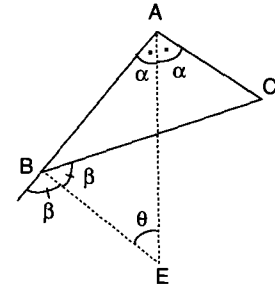
$$m(\widehat{BKC}) = 90^\circ + \frac{m(\widehat{A})}{2}$$

İki dış açıortay arasındaki açı:



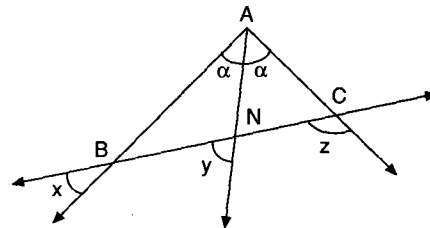
$$m(\widehat{BNC}) = 90^\circ - \frac{m(\widehat{A})}{2}$$

Bir iç açıortay ile farklı köşedeki dış açıortay arasındaki açı :



$$m(\widehat{AEB}) = \frac{m(\widehat{C})}{2}$$

[AN] ; $\widehat{BAC}$ nın açıortayı ve x, y, z yöndeş açılar ise $y = \frac{x+z}{2}$ dir.

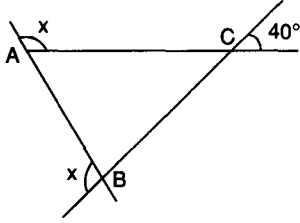


KAVRAM YAYINLARI

KAVRAM YAYINLARI



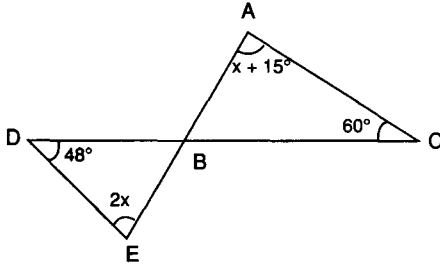
1)



Şekildeki verilere göre x kaç derecedir?

- A) 110 B) 120 C) 125 D) 130 E) 140

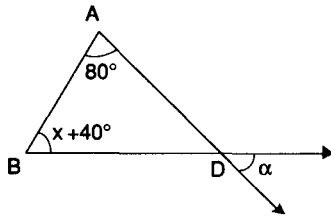
2)



Şekilde verilenlere göre x kaç derecedir?

- A) 38 B) 36 C) 33 D) 27 E) 23

3)

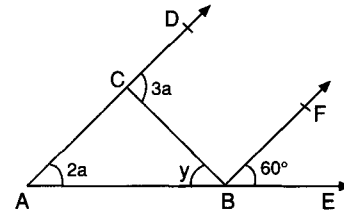


$20^\circ < \alpha < 40^\circ$ ise

x in alacağı değerler hangi aralıkta bulunur?

- A) [20, 40] B) [20, 41] C) [19, 40]
D) [21, 41] E) (20, 40)

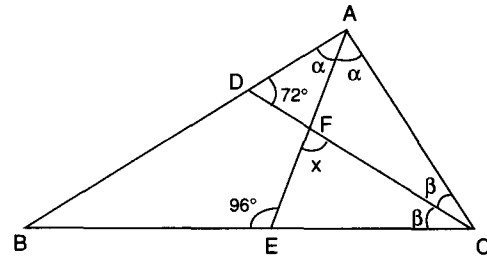
4)



Yukarıdaki şekilde $[BF] \parallel [AD]$ ise verilen ölçülere göre y kaç derecedir?

- A) 25 B) 30 C) 35 D) 40 E) 45

5)



Şekildeki ABC üçgeninde

$$m(\widehat{BAE}) = m(\widehat{CAE}) = \alpha,$$

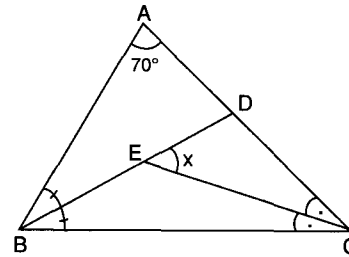
$$m(\widehat{BCD}) = m(\widehat{ACD}) = \beta,$$

$$m(\widehat{ADC}) = 72^\circ, m(\widehat{AEB}) = 96^\circ \text{ ise}$$

$$m(\widehat{EFC}) = x \text{ kaç derecedir?}$$

- A) 57 B) 59 C) 60 D) 64 E) 68

6)



Şekildeki ABC üçgeninde

$[BD]$ ve $[CE]$ açıortaylardır.

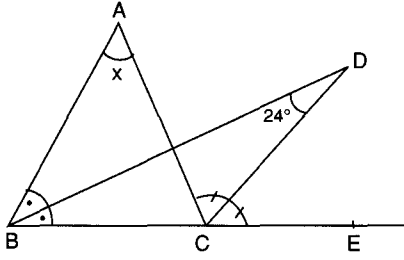
$$m(\widehat{BAC}) = 70^\circ \text{ ise } m(\widehat{DEC}) = x \text{ kaç derecedir?}$$

- A) 40 B) 45 C) 50 D) 55 E) 60

KAVRAM YAYINLARI

KAVRAM YAYINLARI

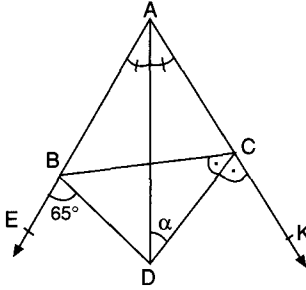
7)



Şekilde $m(\widehat{ABD}) = m(\widehat{EBD})$,
 $m(\widehat{ACD}) = m(\widehat{ECD})$ ve $m(\widehat{BDC}) = 24^\circ$ ise
 $m(\widehat{BAC}) = x$ kaç derecedir?

- A) 36 B) 42 C) 48 D) 52 E) 54

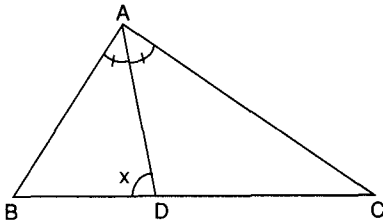
8)



Şekildeki ABC üçgeninde [AD] ve
 [CD] açıortay ve
 $m(\widehat{EBD}) = 65^\circ$ ise $m(\widehat{ADC}) = \alpha$ kaç derecedir?

- A) 10 B) 15 C) 20 D) 25 E) 30

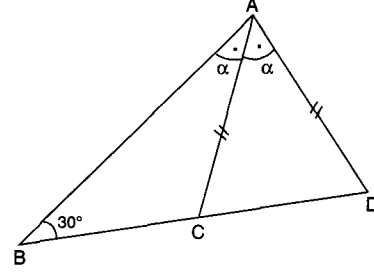
9)



Şekildeki ABC üçgeninde [AD],
 BAC açısının açıortayı ve
 $m(\widehat{B}) - m(\widehat{C}) = 46^\circ$ ise
 $m(\widehat{ADB}) = x$ kaç derecedir?

- A) 60 B) 67 C) 72 D) 78 E) 82

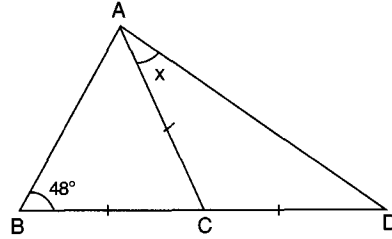
10)



Şekildeki ABC üçgeninde $|AD| = |AC|$,
 $m(\widehat{BAC}) = m(\widehat{CAD}) = \alpha$ ve
 $m(\widehat{ABD}) = 30^\circ$ ise α kaç derecedir?

- A) 30 B) 35 C) 40 D) 45 E) 50

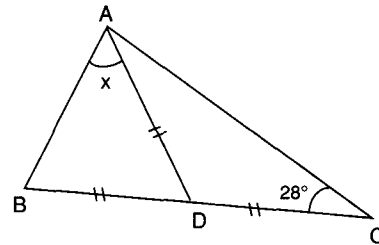
11)



Şekildeki ABD üçgeninde
 $|AC| = |BC| = |DC|$ ve $m(\widehat{ABD}) = 48^\circ$ ise
 $m(\widehat{DAC}) = x$ kaç derecedir?

- A) 40 B) 41 C) 42 D) 43 E) 44

12)



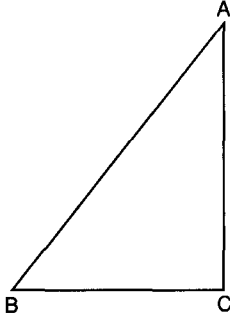
Şekildeki ABC üçgeninde
 $|BD| = |DC| = |AD|$ ve $m(\widehat{ACB}) = 28^\circ$ ise
 $m(\widehat{BAD}) = x$ kaç derecedir?

- A) 58 B) 60 C) 62 D) 64 E) 68

KAVRAM YAYINLARI

KAVRAM YAYINLARI

1)

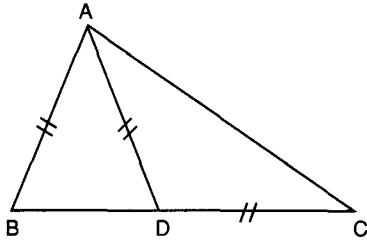


Şekildeki ABC üçgeninde A, B, C iç açıları sırasıyla 2, 3 ve 5 sayıları ile orantılı ise

$m(\widehat{BAC})$ kaç derecedir?

- A) 18 B) 20 C) 24 D) 30 E) 36

2)

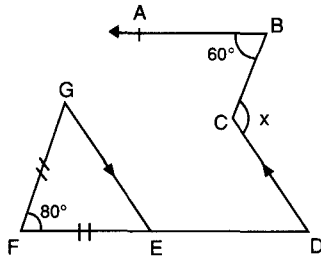


Şekildeki ABC üçgeninde $|AC| = |BC|$ ve $|AB| = |AD| = |DC|$ ise

$m(\widehat{ABC})$ kaç derecedir?

- A) 84 B) 72 C) 68 D) 60 E) 50

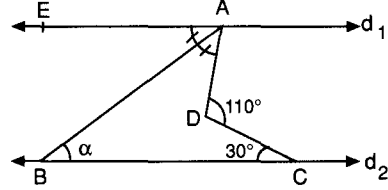
3)



Şekilde $[BA] \parallel [FD]$, $[GE] \parallel [CD]$, $|FG| = |FE|$, $m(\widehat{ABC}) = 60^\circ$ ve $m(\widehat{GFE}) = 80^\circ$ ise $m(\widehat{BCD}) = x$ kaç derecedir?

- A) 110 B) 120 C) 130 D) 140 E) 150

4)



Şekilde $d_1 \parallel d_2$, $m(\widehat{CDA}) = 110^\circ$,

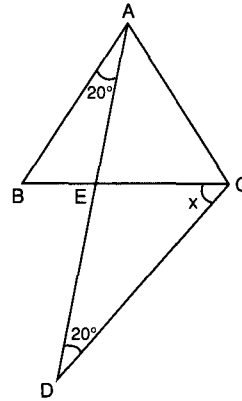
$m(\widehat{DCB}) = 30^\circ$ ve $[AB]$,

DAE açısının açıortayı ise

$m(\widehat{CBA}) = \alpha$ kaç derecedir?

- A) 80 B) 60 C) 40 D) 30 E) 20

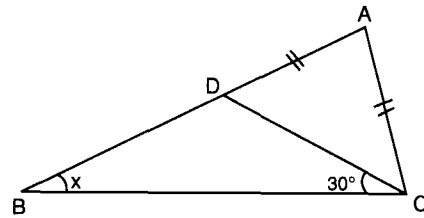
5)



Şekilde ABC eşkenar üçgen ve $m(\widehat{BAD}) = m(\widehat{ADC}) = 20^\circ$ ise $m(\widehat{BCD}) = x$ kaç derecedir?

- A) 60 B) 65 C) 70 D) 75 E) 80

6)



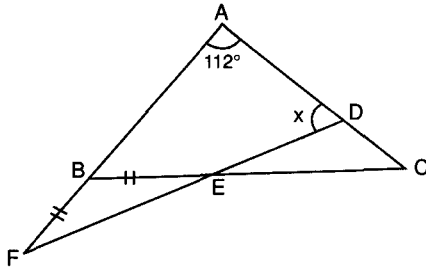
Şekildeki ABC üçgeninde $|AD| = |AC|$, $|AB| = |BC|$ ve $m(\widehat{DCB}) = 30^\circ$ ise $m(\widehat{ABC}) = x$ kaç derecedir?

- A) 15 B) 20 C) 25 D) 30 E) 40

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7)



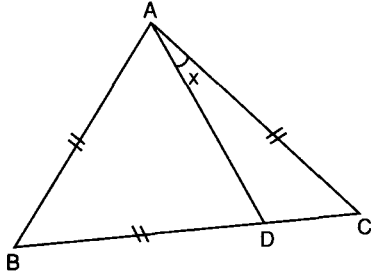
Şekildeki ABC üçgeninde
 $|FB| = |BE|$, $|AB| = |AC|$ ve

$m(\widehat{FAC}) = 112^\circ$ ise

$m(\widehat{FDA}) = x$ kaç derecedir?

- A) 82 B) 73 C) 60 D) 51 E) 40

8)



Şekildeki ABC üçgeninde

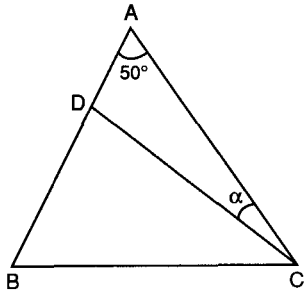
$|AB| = |AC| = |BD|$ ve

$m(\widehat{BAC}) = 80^\circ$ ise

$m(\widehat{DAC}) = x$ kaç derecedir?

- A) 15 B) 20 C) 25 D) 30 E) 35

9)



Şekildeki ABC
 üçgeninde

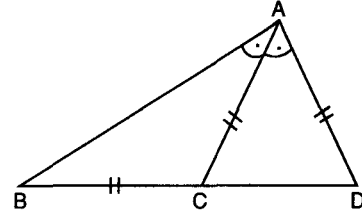
$|AB| = |BC| = |CD|$,

$m(\widehat{BAC}) = 50^\circ$ ise

$m(\widehat{DCA}) = \alpha$ kaç
 derecedir?

- A) 15 B) 20 C) 22,5 D) 25 E) 30

10)

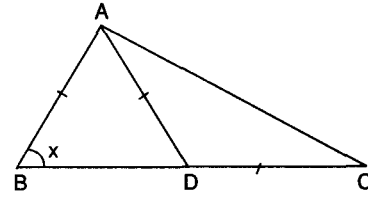


Şekildeki ABD üçgeninde $[AC]$, $\widehat{BAD}$ açısının
 açıortayı ve $|AC| = |AD| = |BC|$ ise

$m(\widehat{CAD})$ kaç derecedir?

- A) 30 B) 36 C) 40 D) 42 E) 50

11)



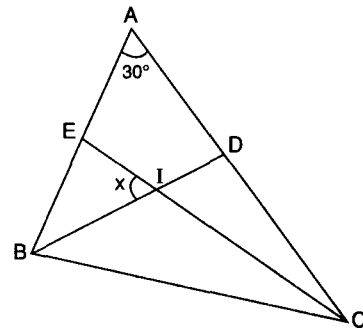
Şekildeki ABC üçgeninde

$|AB| = |AD| = |DC|$ ve $m(\widehat{BAC}) = 84^\circ$ ise

$m(\widehat{ABC}) = x$ kaç derecedir?

- A) 50 B) 60 C) 64 D) 70 E) 77

12)



Şekilde I noktası ABC üçgeninin içteğet
 çemberinin merkezi ve $m(\widehat{BAC}) = 30^\circ$ ise

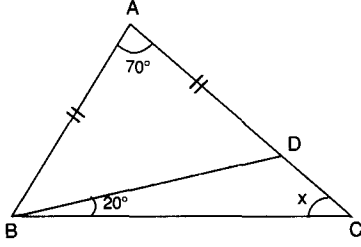
$m(\widehat{BIE}) = x$ kaç derecedir?

- A) 55 B) 60 C) 65 D) 70 E) 75

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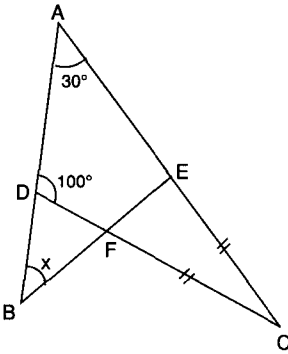
1)



Şekildeki ABC üçgeninde $|AB| = |AD|$,
 $m(\widehat{BAC}) = 70^\circ$, $m(\widehat{DBC}) = 20^\circ$ ise
 $m(\widehat{ACB}) = x$ kaç derecedir?

- A) 30 B) 35 C) 40 D) 50 E) 55

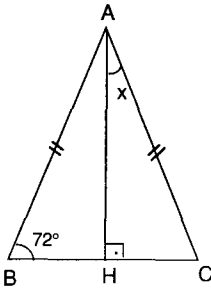
2)



Şekilde
 $|CE| = |CF|$,
 $m(\widehat{BAC}) = 30^\circ$ ve
 $m(\widehat{ADC}) = 100^\circ$ ise
 $m(\widehat{ABE}) = x$ kaç
derecedir?

- A) 25 B) 30 C) 35 D) 40 E) 45

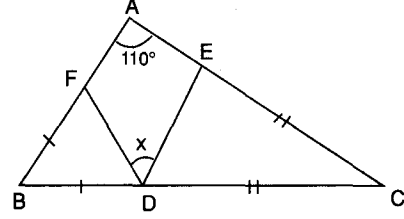
3)



Şekildeki ABC
üçgeninde
 $|AB| = |AC|$,
 $[AH] \perp [BC]$ ise
 $m(\widehat{CAH}) = x$ kaç
derecedir?

- A) 16 B) 17 C) 18 D) 19 E) 20

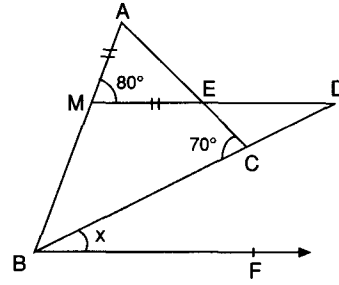
4)



Şekildeki ABC üçgeninde
 $|BD| = |BF|$, $|CD| = |CE|$ ve
 $m(\widehat{BAC}) = 110^\circ$ ise
 $m(\widehat{FDE}) = x$ kaç derecedir?

- A) 35 B) 40 C) 45 D) 50 E) 60

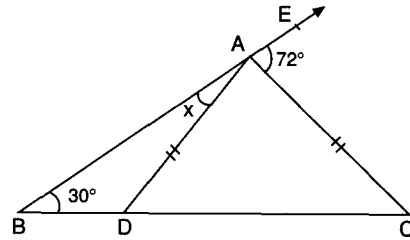
5)



Şekilde $[MD] \parallel [BF]$, $|MA| = |ME|$,
 $m(\widehat{AMD}) = 80^\circ$ ve $m(\widehat{BCA}) = 70^\circ$ ise
 $m(\widehat{DBF}) = x$ kaç derecedir?

- A) 70 B) 40 C) 35 D) 20 E) 10

6)



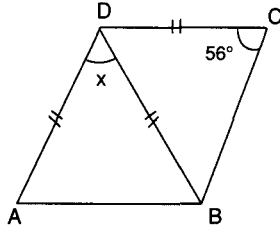
Şekildeki ABC üçgeninde, $|AD| = |AC|$,
 $m(\widehat{CAE}) = 72^\circ$ ve $m(\widehat{ABC}) = 30^\circ$ ise
 $m(\widehat{BAD}) = x$ kaç derecedir?

- A) 10 B) 12 C) 14 D) 16 E) 18

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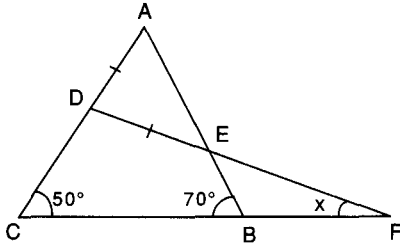
7)



Şekilde $[AB] \parallel [DC]$, $|DA| = |DB| = |DC|$ ve $m(\widehat{DCB}) = 56^\circ$ ise $m(\widehat{ADB}) = x$ kaç derecedir?

- A) 44 B) 46 C) 48 D) 52 E) 54

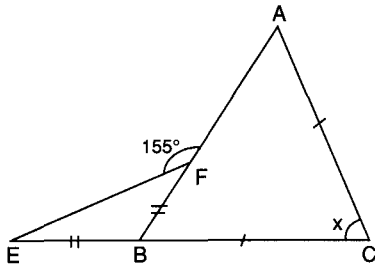
8)



Şekilde $|AD| = |DE|$ ve $m(\widehat{ABC}) = 70^\circ$ ve $m(\widehat{ACF}) = 50^\circ$ ise $m(\widehat{DFC}) = x$ kaç derecedir?

- A) 10 B) 20 C) 25 D) 30 E) 40

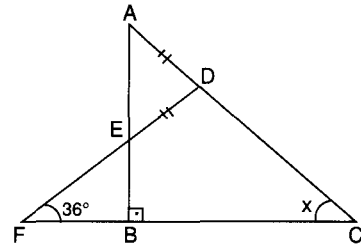
9)



Şekilde $|EB| = |BF|$, $|CB| = |CA|$ ve $m(\widehat{EFA}) = 155^\circ$ ise $m(\widehat{ACE}) = x$ kaç derecedir?

- A) 65 B) 70 C) 75 D) 80 E) 85

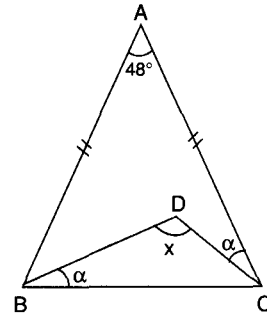
10)



Şekilde $[AB] \perp [FC]$, $|AD| = |DE|$ ve $m(\widehat{DFC}) = 36^\circ$ ise $m(\widehat{ACF}) = x$ kaç derecedir?

- A) 30 B) 36 C) 48 D) 60 E) 72

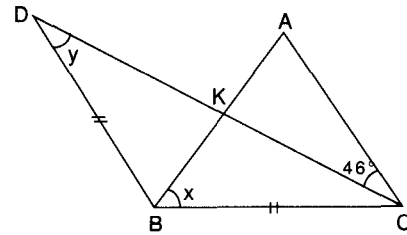
11)



Şekildeki ABC üçgeninde $|AB| = |AC|$, $m(\widehat{BAC}) = 48^\circ$, $m(\widehat{DBC}) = m(\widehat{ACD}) = \alpha$ ise $m(\widehat{BDC}) = x$ kaç derecedir?

- A) 114 B) 115 C) 116 D) 118 E) 122

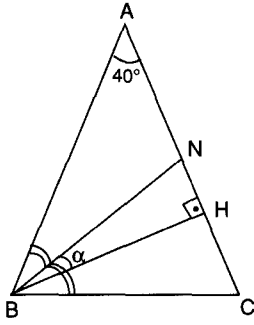
12)



Şekilde $|BD| = |BC|$, $m(\widehat{ABC}) = x$, $m(\widehat{BDC}) = y$, $m(\widehat{ACD}) = 46^\circ$ ve $x + y = 98^\circ$ ise $m(\widehat{A})$ kaç derecedir?

- A) 32 B) 36 C) 46 D) 49 E) 58

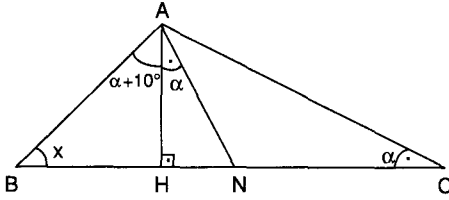
1)



Şekildeki ABC üçgeninde $|AB| = |AC|$, $[BH] \perp [AC]$ dir. $[BN]$, ABC açısının açıortayı ve $m(\widehat{BAC}) = 40^\circ$ ise $m(\widehat{HBN}) = \alpha$ kaç derecedir?

- A) 10 B) 15 C) 20 D) 25 E) 30

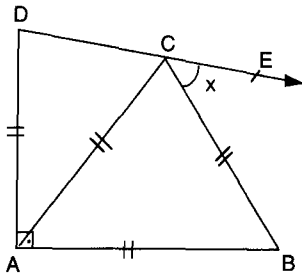
2)



Şekildeki ABC üçgeninde $[AN]$ $\widehat{BAC}$ nın açıortayı, $[AH] \perp [BC]$, $m(\widehat{ACB}) = m(\widehat{HAN}) = \alpha$ ve $m(\widehat{BAH}) = \alpha + 10^\circ$ ise $m(\widehat{ABC}) = x$ kaç derecedir?

- A) 60 B) 55 C) 50 D) 40 E) 30

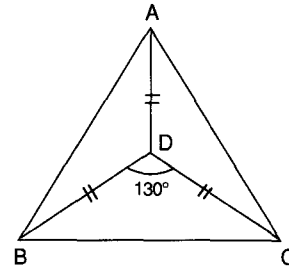
3)



Şekilde $[AD] \perp [AB]$, D, C, E noktaları doğrusal ve $|AD| = |AC| = |AB| = |BC|$ ise $m(\widehat{BCE}) = x$ kaç derecedir?

- A) 70 B) 65 C) 55 D) 45 E) 35

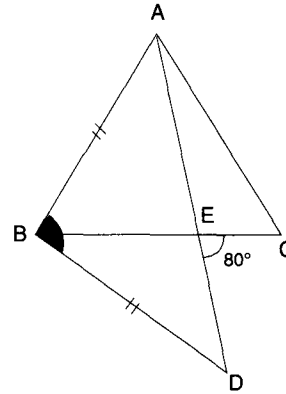
4)



Şekildeki ABC üçgeninde $|AD| = |BD| = |CD|$ ve $m(\widehat{BDC}) = 130^\circ$ ise $m(\widehat{BAC})$ kaç derecedir?

- A) 40 B) 50 C) 65 D) 75 E) 80

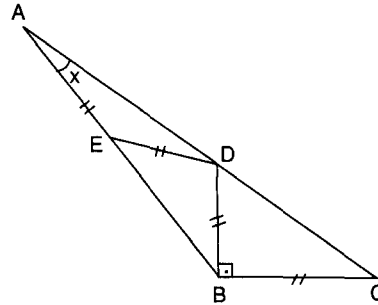
5)



Şekilde ABC eşkenar üçgen, $|AB| = |BD|$ ve $m(\widehat{DEC}) = 80^\circ$ ise $m(\widehat{ABD})$ kaç derecedir?

- A) 75 B) 80 C) 100 D) 110 E) 115

6)



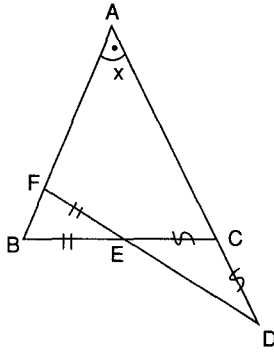
Şekildeki ABC üçgeninde $[DB] \perp [BC]$ ve $|AE| = |ED| = |DB| = |BC|$ olduğuna göre $m(\widehat{BAC}) = x$ kaç derecedir?

- A) 5 B) 10 C) 15 D) 20 E) 25

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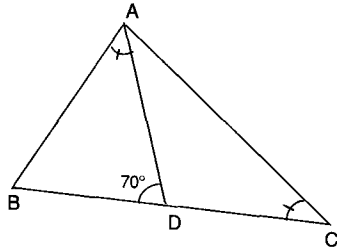
7)



Şekildeki ABC ve AFD üçgenlerinde $|CE| = |CD|$, $|BE| = |EF|$ ve $|AB| = |AC|$ ise $m(\widehat{BAD}) = x$ kaç derecedir?

- A) 18 B) 36 C) 54 D) 60 E) 72

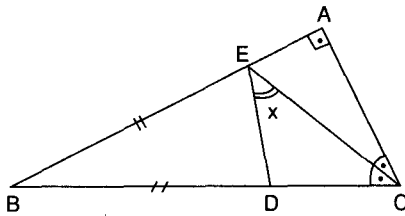
8)



Şekildeki ABC üçgeninde $m(\widehat{BAD}) = m(\widehat{ACB})$ ve $m(\widehat{BDA}) = 70^\circ$ ise $m(\widehat{BAC})$ kaç derecedir?

- A) 65 B) 70 C) 75 D) 80 E) 85

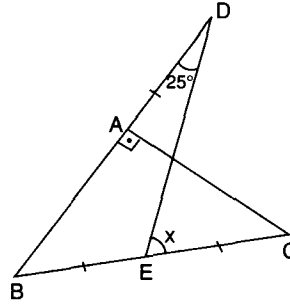
9)



Şekildeki ABC üçgeninde $[AB] \perp [AC]$, $m(\widehat{ACE}) = m(\widehat{ECB})$ ve $|BE| = |BD|$ ise $m(\widehat{DEC}) = x$ kaç derecedir?

- A) 20 B) 25 C) 30 D) 35 E) 45

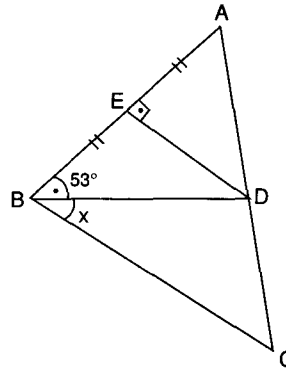
10)



Şekilde ABC diküçgen, $|BE| = |EC| = |AD|$ ve $m(\widehat{BDE}) = 25^\circ$ ise $m(\widehat{DEC}) = x$ kaç derecedir?

- A) 60 B) 65 C) 70 D) 75 E) 80

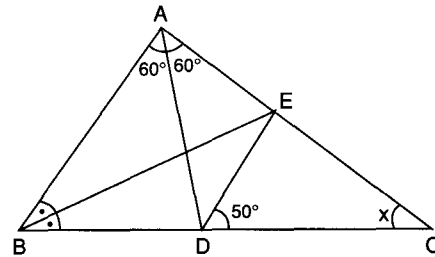
11)



Şekildeki ABC üçgeninde $[DE] \perp [AB]$, $|AB| = |BC|$, $|AE| = |EB|$ ve $m(\widehat{ABD}) = 53^\circ$ ise $m(\widehat{DBC}) = x$ kaç derecedir?

- A) 19 B) 21 C) 23 D) 25 E) 27

12)



Şekildeki ABC üçgeninde $m(\widehat{BAD}) = m(\widehat{DAC}) = 60^\circ$, $m(\widehat{ABE}) = m(\widehat{EBC})$ ve $m(\widehat{EDC}) = 50^\circ$ ise $m(\widehat{ACB}) = x$ kaç derecedir?

- A) 15 B) 20 C) 25 D) 30 E) 35

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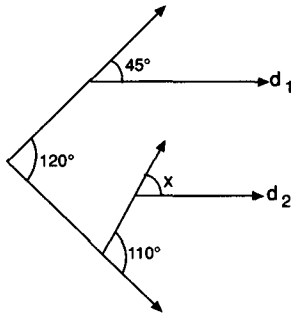


- 1) Bütünler iki açının ölçüleri oranı $\frac{7}{13}$ ise

büyük açının ölçüsü kaç derecedir?

- A) 63 B) 90 C) 108 D) 117 E) 124

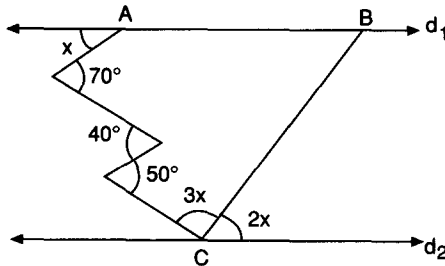
2)



Şekilde $d_1 \parallel d_2$ ise **diğer verilenlere göre x kaç derecedir?**

- A) 15 B) 25 C) 35 D) 40 E) 45

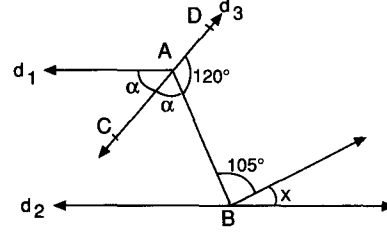
3)



Şekilde $d_1 \parallel d_2$ ise **diğer verilenlere göre x kaç derecedir?**

- A) 32 B) 30 C) 28 D) 26 E) 25

4)

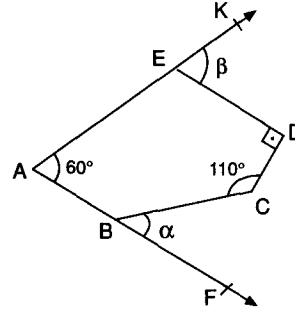


Şekilde $d_1 \parallel d_2$ ve

C, A, D noktaları doğrusal ise **diğer verilenlere göre x kaç derecedir?**

- A) 10 B) 15 C) 20 D) 25 E) 30

5)



Şekilde

$[ED] \perp [DC]$,

$m(\widehat{KAF}) = 60^\circ$,

$m(\widehat{DCB}) = 110^\circ$,

$m(\widehat{KED}) = \beta$ ve

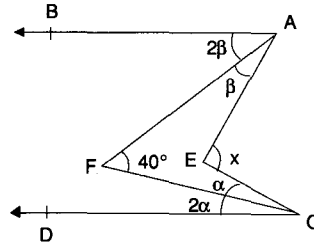
$m(\widehat{CBF}) = \alpha$ ise

$\alpha + \beta$ kaç derecedir?

- A) 50 B) 60 C) 70 D) 80 E) 90

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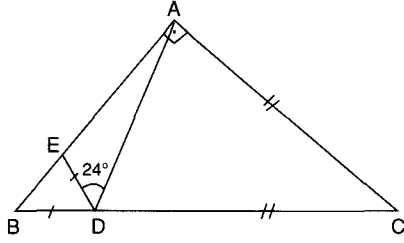
6)



Şekilde $AB \parallel CD$, $m(\widehat{BAF}) = 2m(\widehat{FAE}) = 2\beta$,
 $m(\widehat{FCD}) = 2m(\widehat{FCE}) = 2\alpha$ ve $m(\widehat{AFC}) = 40^\circ$ ise
 $m(\widehat{AEC}) = x$ kaç derecedir?

- A) 55 B) 60 C) 65 D) 70 E) 75

7)

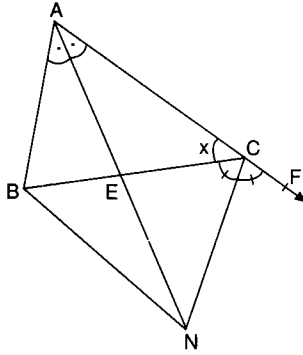


Şekildeki ABC üçgeninde, $[AB] \perp [AC]$,
 $|AC| = |DC|$, $|BD| = |ED|$ ve
 $m(\widehat{EDA}) = 24^\circ$ ise

$m(\widehat{BDE}) = x$ kaç derecedir?

- A) 80 B) 82 C) 86 D) 88 E) 89

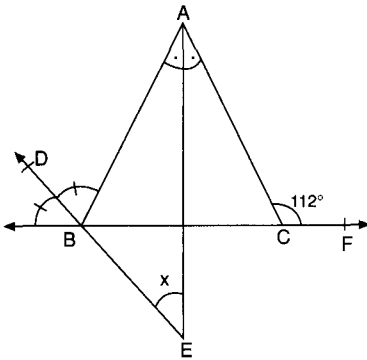
8)



Şekilde ABC
 üçgeninde,
 $[AN]$ iç, $[CN]$ dış
 açıortaylar,
 $m(\widehat{AEC}) = 110^\circ$ ve
 $m(\widehat{ABN}) = 125^\circ$ ise
 $m(\widehat{ACB}) = x$ kaç
 derecedir?

- A) 25 B) 30 C) 35 D) 40 E) 45

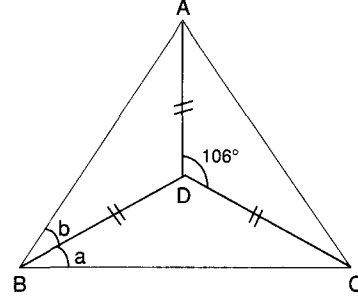
9)



Şekildeki ABC üçgeninde $[AE]$ ve
 $[BD]$ açıortay $m(\widehat{ACF}) = 112^\circ$ ve
 D, B, E doğrusal noktalar ise
 $m(\widehat{AED}) = x$ kaç derecedir?

- A) 30 B) 32 C) 34 D) 36 E) 40

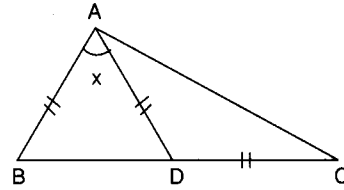
10)



Şekildeki ABC üçgeninde $|AD| = |BD| = |CD|$,
 $m(\widehat{ABD}) = b$, $m(\widehat{DBC}) = a$, $m(\widehat{ADC}) = 106^\circ$ ve
 $a - b = 27^\circ$ ise a kaç derecedir?

- A) 18 B) 24 C) 30 D) 36 E) 40

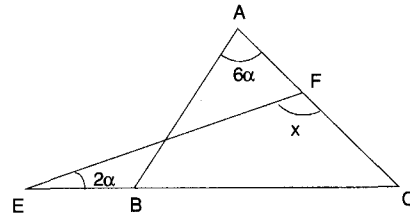
11)



Şekildeki ABC üçgeninde
 $|AB| = |AD| = |DC|$ ve $m(\widehat{BAC}) = 105^\circ$ ise
 $m(\widehat{BAD}) = x$ kaç derecedir?

- A) 50 B) 60 C) 75 D) 80 E) 85

12)



Şekildeki ABC üçgeninde $|AB| = |AC|$,
 $m(\widehat{BAC}) = 6\alpha$ ve $m(\widehat{CEF}) = 2\alpha$ ise
 $m(\widehat{EFC}) = x$ in α türünden eşiti aşağıdakil-
 erden hangisidir?

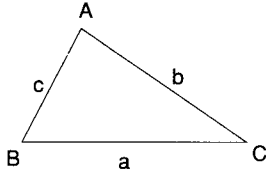
- A) $180 - \alpha$ B) 3α C) $90 - \alpha$
 D) $90 + \alpha$ E) 90



ÜÇGENDE KENARLARLA İLGİLİ BAĞINTILAR

Bir üçgende büyük açı karşısında büyük kenar bulunur.

$$ABC \text{ üçgeninde } m(\hat{A}) \geq m(\hat{B}) \geq m(\hat{C}) \Leftrightarrow a \geq b \geq c$$

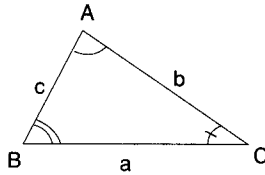


Bir üçgende iki kenarın uzunlukları toplamı üçüncü kenarın uzunluğundan büyüktür. İki kenarın farkı mutlak değerce üçüncü kenardan küçüktür.

$$|b - c| < a < b + c$$

$$|a - c| < b < a + c$$

$$|a - b| < c < a + b$$



Bir ABC üçgeninde

$$m(\hat{A}) = 90^\circ \text{ ise } a^2 = b^2 + c^2 \text{ dir.}$$

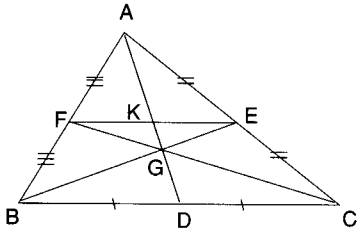
$$m(\hat{A}) > 90^\circ \text{ ise } a^2 > b^2 + c^2 \text{ dir.}$$

$$m(\hat{A}) < 90^\circ \text{ ise } a^2 < b^2 + c^2 \text{ dir.}$$

ÜÇGENDE KENARORTAY ÖZELLİKLERİ

Tanım: Üçgende bir kenarın orta noktasını karşı köşeye birleştiren doğru parçası kenarortaydır.

Bir üçgenin üç kenarortayının kesim noktası o üçgenin ağırlık merkezi olup bu nokta her bir kenarortayı ikiye 1/2 oranında böler.



İki kenarın orta noktasını birleştiren doğru parçası üçüncü kenara paralel ve onun yarısına eşittir.

G ağırlık merkezi ise;

$$|AK| = |KD| = \frac{|AD|}{2} = \frac{\vartheta_a}{2}$$

$$|KG| = \frac{|GD|}{2} = \frac{|AK|}{3} = \frac{|AD|}{6} = \frac{\vartheta_a}{6}$$

$$|GD| = \frac{|AG|}{2} = \frac{|AD|}{3} = \frac{\vartheta_a}{3}$$

$$|AG| = 2 \cdot |GD| = \frac{2}{3} |AD| = \frac{2\vartheta_a}{3} \text{ dır.}$$

$$m(\hat{A}) > 90^\circ \text{ ise } \vartheta_a < \frac{a}{2}$$

$$m(\hat{A}) < 90^\circ \text{ ise } \vartheta_a > \frac{a}{2} \text{ ve}$$

$$m(\hat{A}) = 90^\circ \text{ ise } \vartheta_a = \frac{a}{2} \text{ dir.}$$

Kenarortay Teoremi

ABC üçgeninde

a, b, c, V_a arasındaki bağıntı

$$b^2 + c^2 = 2V_a^2 + \frac{a^2}{2}$$

a, b, c, V_b arasındaki bağıntı

$$a^2 + c^2 = 2V_b^2 + \frac{b^2}{2}$$

a, b, c, V_c arasındaki bağıntı

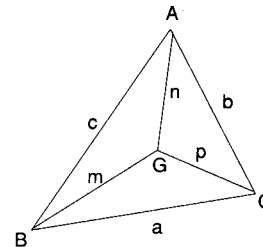
$$a^2 + b^2 = 2V_c^2 + \frac{c^2}{2}$$

ABC üçgeninde G ağırlık merkezinin köşelere uzaklıkları

$$|GA| = n$$

$$|GB| = m$$

$$|GC| = p \text{ ise}$$



$$a^2 + b^2 + c^2 = 3 \cdot (m^2 + n^2 + p^2)$$

ABC üçgeninde

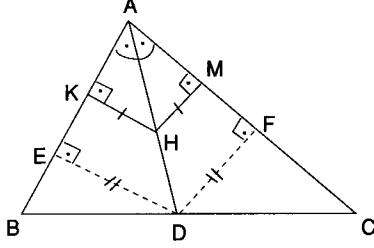
$$m(\hat{A}) = 90^\circ \text{ ise } V_b^2 + V_c^2 = 5 \cdot V_a^2 \text{ dir.}$$

KAVRAM YAYINLARI

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ÜÇGENDE AÇIORTAY ÖZELLİKLERİ

Açıortay üzerindeki bir noktanın açının kollarına olan dik uzaklıkları eşittir.



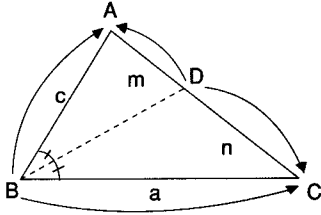
A açısının açıortayı [AD]

$H \in [AD]$

$[HK] \perp [AB]$

$[HM] \perp [AC]$ ise $|HK| = |HM|$

Üçgende bir iç açıortay karşı kenarı içten, dış açıortayı ise dıştan, üçgenin diğer iki kenar uzunluklarıyla orantılı böler.

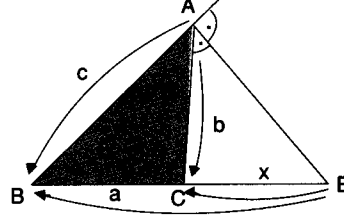


$$\frac{|DA|}{|DC|} = \frac{|BA|}{|BC|} = \frac{c}{a} = \frac{m}{n}$$

$$|BD|^2 = a \cdot c - m \cdot n$$

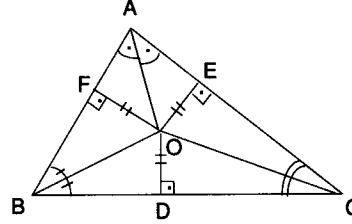
[AE] dış açıortay

$$\frac{|EB|}{|EC|} = \frac{|AB|}{|AC|} = \frac{c}{b} = \frac{a+x}{x}$$



$$|AE|^2 = |CE| \cdot |BE| - b \cdot c$$

İç açıortayların kesim noktası üçgenin kenarlarına eşit uzaklıkta olup bu nokta üçgenin iç teğet çemberinin merkezidir.

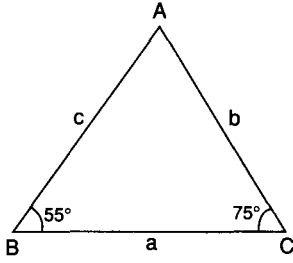


$$|OD| = |OE| = |OF|$$

KAVRAM YAYINLARI

KAVRAM YAYINLARI

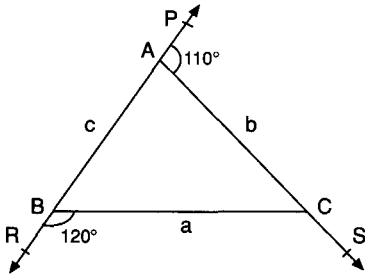
1)



Şekilde verilenlere göre **ABC** üçgeninin kenar uzunluklarının doğru sıralaması aşağıdakilerden hangisidir?

- A) $a < b < c$ B) $b < c < a$ C) $c < b < a$
D) $b < a < c$ E) $a < c < b$

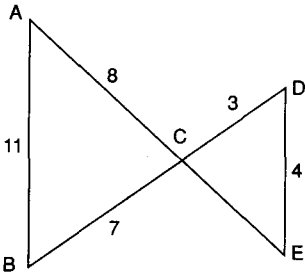
2)



Şekildeki ABC üçgeninde
 $m(\widehat{PAS}) = 110^\circ$, $m(\widehat{RBC}) = 120^\circ$,
 $|AB| = c$ br, $|AC| = b$ br ve $|BC| = a$ br ise
a, b, c kenarları arasındaki doğru sıralama aşağıdakilerden hangisidir?

- A) $a < b < c$ B) $c < b < a$ C) $c < a < b$
D) $b < a < c$ E) $a < c < b$

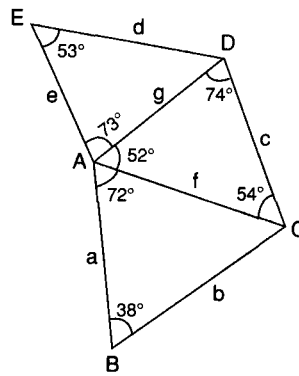
3)



Şekilde verilenlere göre **en büyük açı** aşağıdakilerden hangisidir?

- A) A B) B C) C D) D E) E

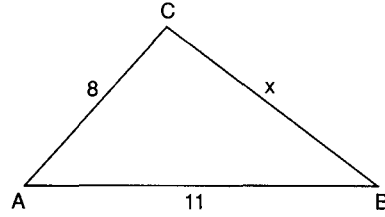
4)



Şekilde verilenlere göre **en kısa kenar** aşağıdakilerden hangisidir?

- A) a B) b C) c D) e E) g

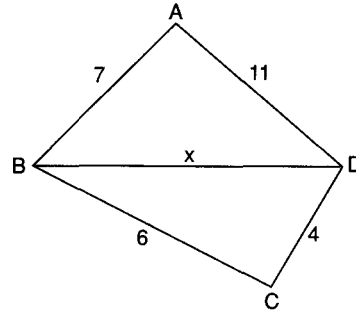
5)



Şekildeki ABC üçgeninde $m(\widehat{C}) > m(\widehat{B}) > m(\widehat{A})$
 $|AC| = 8$ br ve $|AB| = 11$ br ise
 $|BC| = x$ in alabileceği tamsayı değerlerinin toplamı kaçtır?

- A) 22 B) 23 C) 24 D) 25 E) 26

6)

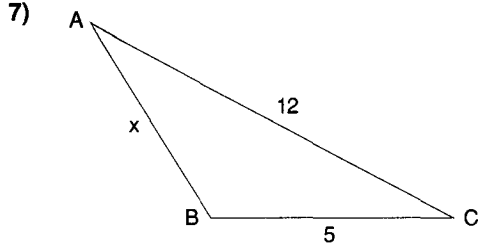


Şekilde verilenlere göre
 $|BD| = x$ in en geniş tanım aralığı aşağıdakilerden hangisidir?

- A) $4 < x < 18$ B) $4 < x < 10$ C) $2 < x < 18$
D) $2 < x < 10$ E) $10 < x < 18$

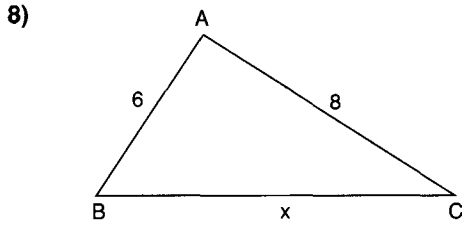
KAVRAM YAYINLARI

KAVRAM YAYINLARI



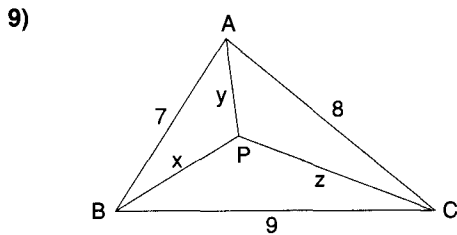
Şekildeki ABC üçgeninde $m(\widehat{B}) > m(\widehat{C})$,
 $|AC| = 12$ br ve $|BC| = 5$ br ise
 $|AB| = x$ in alabileceği tamsayı değerlerinin
 toplamı kaçtır?

- A) 34 B) 35 C) 36 D) 37 E) 38



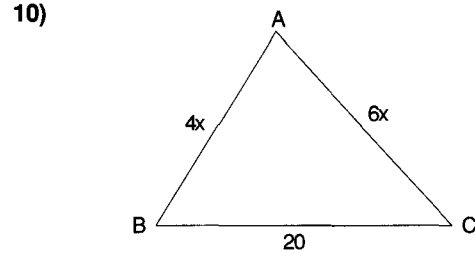
Şekildeki ABC üçgeninde $m(\widehat{BAC}) > 90^\circ$,
 $|AB| = 6$ br ve $|AC| = 8$ br ise
 $|BC| = x$ in alabileceği tamsayı değerlerinin
 toplamı kaçtır?

- A) 36 B) 35 C) 34 D) 33 E) 32



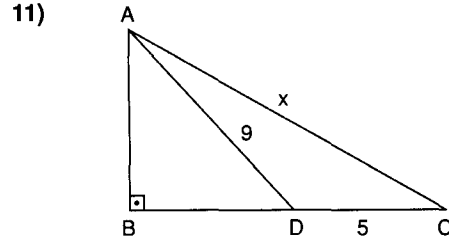
Şekildeki ABC üçgeninde $|AB| = 7$ br,
 $|AC| = 8$ br, $|BC| = 9$ br, $|PB| = x$ br,
 $|PA| = y$ br ve $|PC| = z$ br ise
 $x + y + z$ toplamının en büyük tamsayı
 değeri kaç br dir?

- A) 12 B) 15 C) 16 D) 20 E) 23



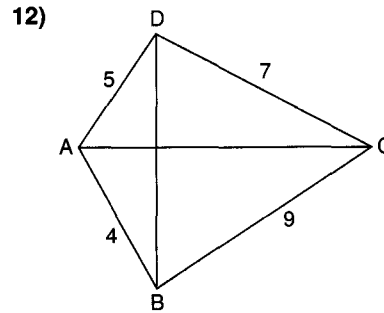
Şekildeki ABC üçgeninde $|AB| = 4x$ br ,
 $|AC| = 6x$ br ve $|BC| = 20$ br ise
 $\angle(ABC)$ en çok kaç br olur?
 $(x \in \mathbb{Z}^+)$

- A) 120 B) 110 C) 100 D) 90 E) 80



Şekildeki ABC diküçgeninde $|AD| = 9$ br ve
 $|DC| = 5$ br ise $|AC| = x$ in alabileceği kaç
 farklı tamsayı değeri vardır?

- A) 2 B) 3 C) 4 D) 5 E) 6



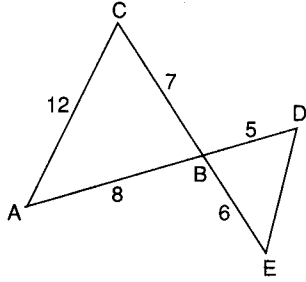
Şekildeki ABCD dörtgeninde $|AB| = 4$ br ,
 $|BC| = 9$ br, $|DC| = 7$ br ve $|AD| = 5$ br ise
 $|AC| + |DB|$ nin alabileceği en büyük ve en
 küçük tamsayı değerleri toplamı kaçtır?

- A) 33 B) 32 C) 30 D) 28 E) 24

KAVRAM YAYINLARI

KAVRAM YAYINLARI

1)

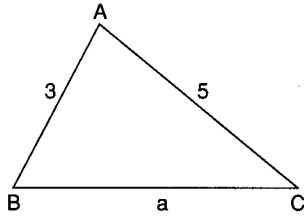


Şekilde belirtilen uzunluklara göre en büyük açı aşağıdakilerden hangisidir?

$$([AD] \cap [EC] = \{B\})$$

- A) A B) B C) C D) D E) E

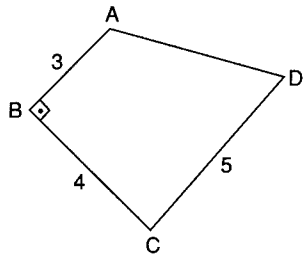
2)



Şekilde $m(\hat{A}) < 90^\circ$ ve $|AB| = 3$ br ve $|AC| = 5$ br ise **a kenarının alabileceği tamsayı değerleri toplamı kaç br dir?**

- A) 12 B) 15 C) 18 D) 21 E) 25

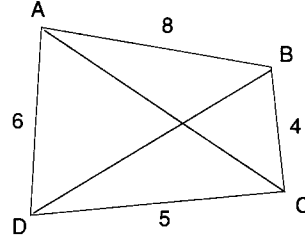
3)



Şekilde, $[AB] \perp [BC]$ ve $|AB| = 3$ br, $|BC| = 4$ br, $|CD| = 5$ br ise **|AD| aşağıdakilerden hangisi olamaz?**

- A) 1 B) 4 C) 5 D) 8 E) 10

4)



Şekildeki dörtgende,

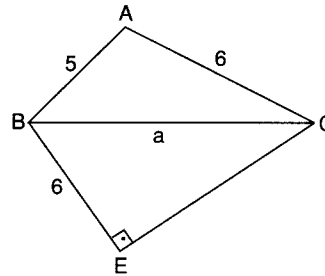
$$|AB| = 8 \text{ br}, |AD| = 6 \text{ br}$$

$$|BC| = 4 \text{ br ve } |DC| = 5 \text{ br ise}$$

|AC| + |BD| kaç br olabilir?

- A) 6 B) 19 C) 21 D) 23 E) 25

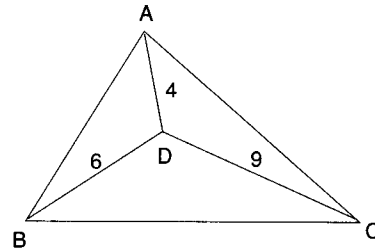
5)



Şekilde verilene göre **a en büyük tamsayı değerini aldığı anda |EC| kaç br olur?**

- A) $6\sqrt{2}$ B) 8 C) $5\sqrt{2}$ D) 7 E) 6

6)

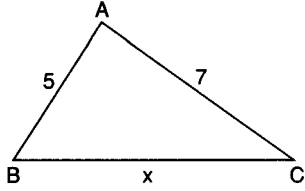


Şekilde $|AD| = 4$ br, $|BD| = 6$ br, $|DC| = 9$ br veriliyor.

ABC üçgenin çevresi aşağıdakilerden hangisine eşit olamaz?

- A) 20 B) 22 C) 28 D) 37 E) 38

7)



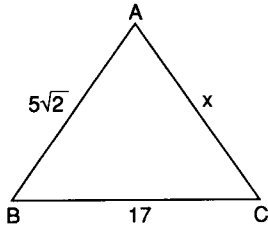
Şekildeki ABC üçgeninde $m(\hat{A}) > 90^\circ$ olmak koşuluyla x kaç farklı tamsayı değeri alabilir?

- A) 1 B) 2 C) 3 D) 4 E) 5

8) Bir ABC üçgeninde A köşesinden çizilen kenarortay V_a , açıortay n_A ve yükseklik h_a olmak üzere aşağıdakilerden hangisi doğrudur?

- A) $h_a \leq n_A \leq V_a$ B) $V_a \leq n_A \leq h_a$
C) $n_A \leq V_a \leq h_a$ D) $h_a \leq V_a \leq n_A$
E) $n_A \leq h_a \leq V_a$

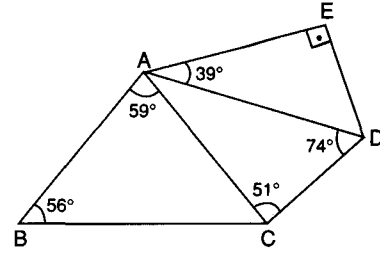
9)



Şekildeki ABC üçgeninde $m(\hat{ABC}) > 45^\circ$, $|AB| = 5\sqrt{2}$ br ve $|BC| = 17$ br ise $|AC| = x$ in en küçük tamsayı değeri kaçtır?

- A) 10 B) 12 C) 13 D) 14 E) 15

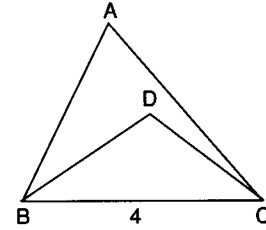
10)



Yukarıdaki şekilde verilenlere göre en kısa kenar aşağıdakilerden hangisidir?

- A) [ED] B) [BC] C) [CD] D) [AC] E) [AD]

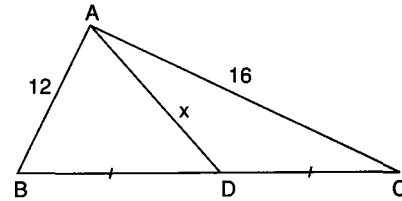
11)



Şekildeki ABC üçgeninde D noktası üçgenin iç bölgesinde bir noktadır. $5|AB| = 3|AC|$ ve $|BC| = 4$ br ise BDC üçgeninin çevresinin alabileceği en büyük tamsayı değeri kaçtır?

- A) 16 B) 17 C) 18 D) 19 E) 20

12)



Şekildeki ABC üçgeninde $m(\hat{BAC}) > 90^\circ$, $|AB| = 12$ br ve $|AC| = 16$ br ise $|AD| = x$ in alabileceği en büyük tamsayı değeri kaçtır?

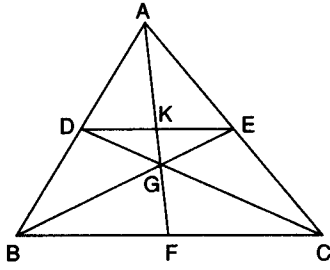
- A) 13 B) 12 C) 10 D) 9 E) 8

KAVRAM YAYINLARI

KAVRAM YAYINLARI



1)

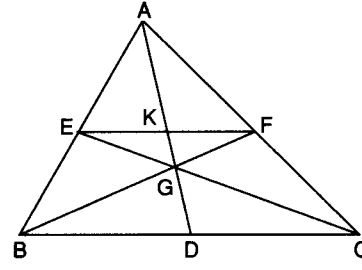


Şekilde G noktası ABC üçgeninin ağırlık merkezi ise

$$\frac{|AF| + |AG|}{|KG| + |GF|} \text{ kaçtır?}$$

- A) $\frac{1}{3}$ B) 1 C) $\frac{5}{3}$ D) $\frac{8}{3}$ E) $\frac{10}{3}$

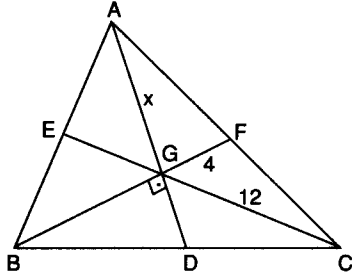
4)



Şekildeki ABC üçgeninde D, E, F kenarların orta noktaları ve $|KG|=7$ br ise $|AG|$ kaç br dir?

- A) 24 B) 28 C) 30 D) 42 E) 43

2)

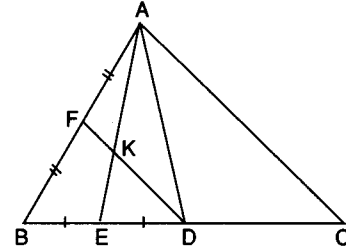


Şekildeki ABC üçgeninde, G noktası ağırlık merkezidir.

$|BF| \perp |AD|$, $|FG|=4$ br ve $|CG|=12$ br ise $|AG|=x$ kaç br dir?

- A) $2\sqrt{6}$ B) $3\sqrt{5}$ C) $4\sqrt{5}$ D) $5\sqrt{5}$ E) $6\sqrt{6}$

5)



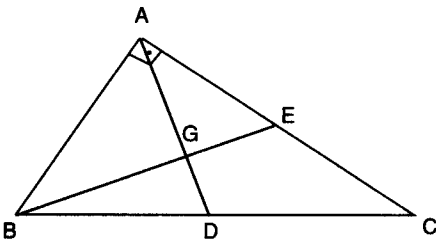
Şekildeki ABC üçgeninde $|AF|=|FB|$

$$|BE|=|ED|=\frac{|DC|}{2} \text{ ve}$$

$|AC|=12$ br ise $|KD|$ kaç br dir?

- A) 2 B) 4 C) 5 D) 6 E) 7

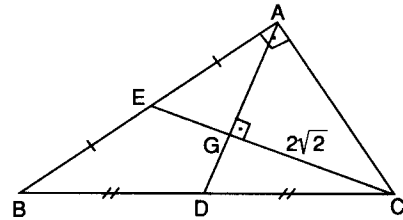
3)



Şekilde ABC diküçgen, G noktası ağırlık merkezi $|BE|=9$ br ve $|GA|=2\sqrt{5}$ br ise $|AB|$ kenarına alt kenarortay uzunluğu kaç br dir?

- A) 5 B) 6 C) 9 D) 12 E) 15

6)



Şekildeki ABC diküçgeninde $|EC| \perp |AD|$,

$$|AE|=|EB|, |BD|=|DC| \text{ ve}$$

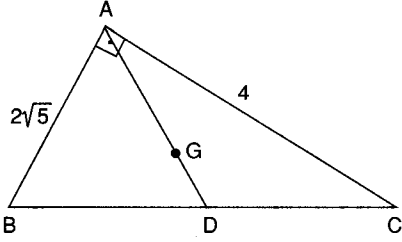
$|GC|=2\sqrt{2}$ br ise $|AB|$ kaç br dir?

- A) 2 B) $2\sqrt{2}$ C) $2\sqrt{3}$ D) $3\sqrt{2}$ E) $2\sqrt{6}$

KAVRAM YAYINLARI

KAVRAM YAYINLARI

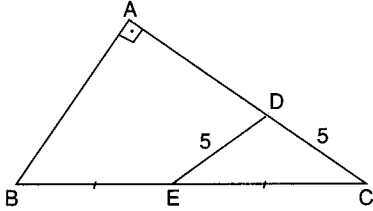
7)



Şekildeki ABC diküçgeninde ,
 $|AB| = 2\sqrt{5}$ br , $|AC| = 4$ br ve G noktası ağırlık
 merkezi ise $|AG|$ kaç br dir?

- A) 1 B) 2 C) 3 D) $\sqrt{5}$ E) $\sqrt{2}$

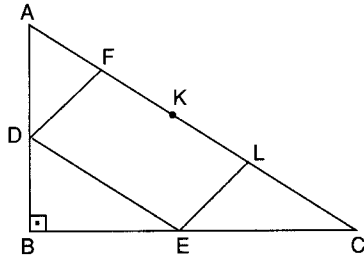
8)



Şekildeki ABC diküçgeninde
 $|DE| = |DC| = 5$ br , $|BE| = |EC|$ ve
 $|AC| = 16$ br ise $|AB|$ kaç br dir?

- A) 12 B) 11 C) 10 D) 9 E) 8

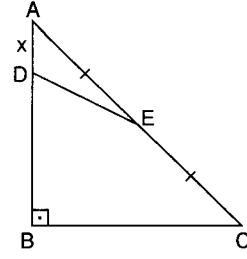
9)



Şekildeki ABC diküçgeninde,
 $|AF| = |FK| = |KL| = |LC|$,
 $|AD| = |DB|$, $|BE| = |EC|$ ve
 DELF dörtgeninin çevresi 18 br ise
 $|AC|$ kaç br dir?

- A) 24 B) 21 C) 18 D) 16 E) 12

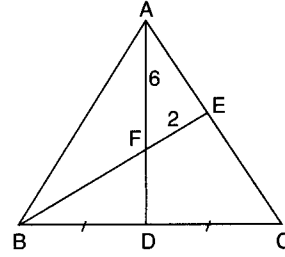
10)



Şekildeki ABC diküçgeninde
 $|AE| = |EC|$, $|AB| = |BC|$
 $\frac{|AD|}{|DB|} = \frac{1}{3}$ ve $|DE| = 3\sqrt{5}$ br ise
 $|AD| = x$ kaç br dir?

- A) 1 B) $\sqrt{3}$ C) 2 D) $\sqrt{5}$ E) 3

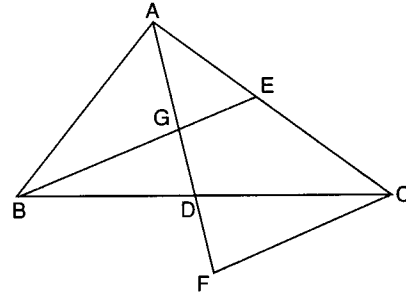
11)



Şekildeki ABC üçgeninde $|AB| = 2|AE|$,
 $|BF| = 2|FE|$, $|BD| = |DC|$, $|FE| = 2$ br ve
 $|AF| = 6$ br ise $|BC|$ kaç br dir?

- A) 8 B) 7 C) 6 D) $2\sqrt{7}$ E) $\sqrt{11}$

12)



Şekildeki ABC üçgeninde G noktası ağırlık
 merkezi , $|GD| = |DF|$ ve $|FC| = 8$ br ise
 $|BE|$ kaç br dir?

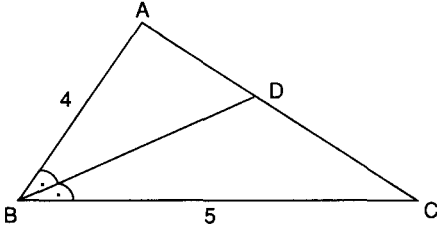
- A) 8 B) 10 C) 12 D) 14 E) 16

KAVRAM YAYINLARI

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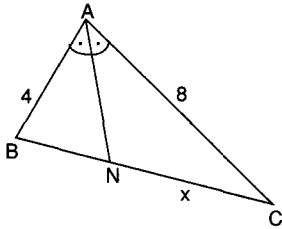
1)



Şekildeki ABC üçgeninde [BD] açıortay
 $|AB| = 4$ br, $|BC| = 5$ br ve
 $m(\widehat{ABC}) = 2m(\widehat{ACB})$ ise $|AC|$ kaç br dir?

- A) 9 B) 8 C) 6 D) 5 E) 4

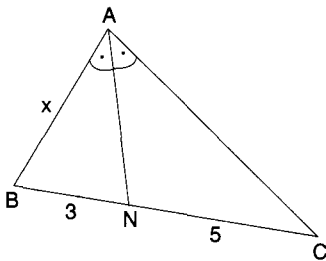
2)



Şekildeki ABC
üçgeninde
[AN] açıortaydır.
 $|AB| = 4$ br,
 $|AC| = 8$ br ve
 $|BC| = 9$ br ise
 $|CN| = x$ kaç
br dir?

- A) 3 B) 4 C) 5 D) 6 E) 7

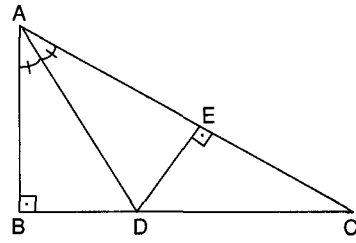
3)



Şekildeki ABC üçgeninde [AN] açıortaydır.
 $|BN| = 3$ br, $|NC| = 5$ br ve
ABC üçgeninin çevresi 32 br ise
 $|AB| = x$ kaç br dir?

- A) 6 B) 9 C) 12 D) 15 E) 18

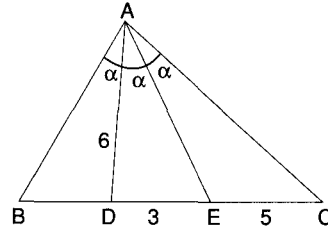
4)



Şekildeki ABC diküçgeninde $\frac{|AB|}{|AC|} = \frac{5}{13}$
 $|EC| = 24$ br ve [AD] açıortay ise
[DC] kaç br dir?

- A) 25 B) 26 C) 27 D) 30 E) 32

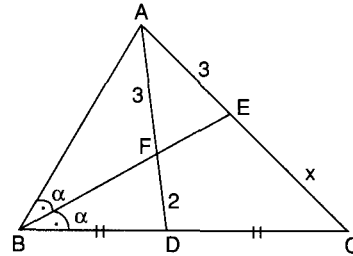
5)



Şekildeki ABC üçgeninde
 $m(\widehat{BAD}) = m(\widehat{DAE}) = m(\widehat{EAC})$,
 $|AD| = 6$ br, $|CE| = 5$ br ve
 $|DE| = 3$ br ise $|BC|$ kaç br dir?

- A) 9 B) 10 C) 11 D) 12 E) 13

6)



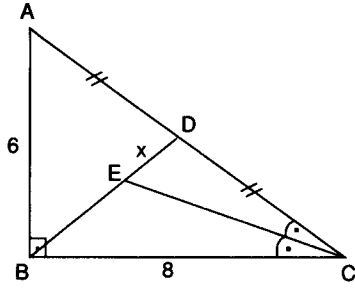
Şekildeki ABC üçgeninde, $|AF| = |AE| = 3$ br,
 $|FD| = 2$ br, [BE] açıortay ve
[AD] kenarortay ise $|EC| = x$ kaç br dir?

- A) 4 B) 5 C) $3\sqrt{3}$ D) 6 E) $4\sqrt{5}$

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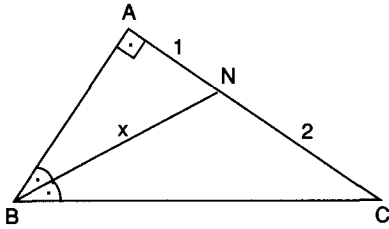
7)



Şekildeki ABC diküçgeninde,
 $m(\widehat{BCE}) = m(\widehat{ECA})$, $|AD| = |DC|$,
 $|AB| = 6$ br ve $|BC| = 8$ br ise
 $|ED| = x$ kaç br dir?

- A) $\frac{4}{3}$ B) $\frac{25}{13}$ C) $\frac{10}{3}$ D) $\frac{50}{13}$ E) $\frac{25}{3}$

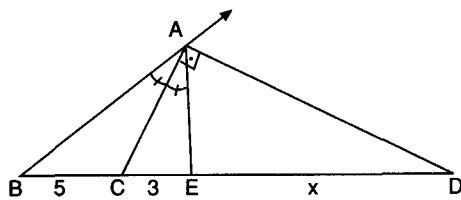
8)



Şekildeki ABC diküçgeninde [BN] açıortay,
 $|AN| = 1$ br ve $|NC| = 2$ br ise
 $|BN| = x$ kaç br dir?

- A) $\sqrt{3}$ B) 2 C) $2\sqrt{3}$ D) 4 E) $3\sqrt{3}$

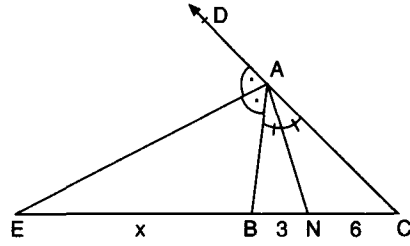
9)



Şekildeki ABD üçgeninde
 $[CA] \perp [AD]$, $m(\widehat{BAC}) = m(\widehat{CAE})$,
 $|BC| = 5$ br ve $|CE| = 3$ br ise
 $|ED| = x$ kaç br dir?

- A) 8 B) 10 C) 12 D) 14 E) 16

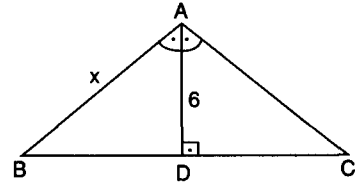
10)



Şekildeki AEC üçgeninde $m(\widehat{DAE}) = m(\widehat{EAB})$,
 $m(\widehat{BAN}) = m(\widehat{NAC})$, $|BN| = 3$ br ve
 $|NC| = 6$ br ise $|EB| = x$ kaç br dir?

- A) 6 B) 7,5 C) 8 D) 9 E) 12

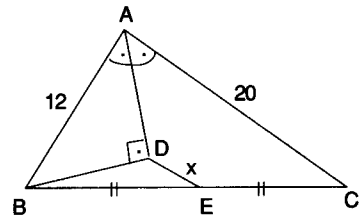
11)



Şekildeki ABC üçgeninde [AD] açıortay,
 $[AD] \perp [BC]$, $|AD| = 6$ br ve
 $|BC| = 16$ br ise $|AB| = x$ kaç br dir?

- A) 8 B) 9 C) 10 D) 12 E) 14

12)



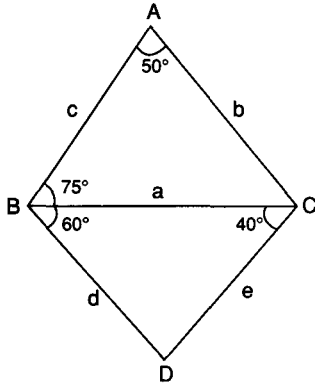
Şekildeki ABC üçgeninde [AD] açıortay,
 $[BD] \perp [AD]$, $|BE| = |EC|$, $|AB| = 12$ br ve
 $|AC| = 20$ br ise $|DE| = x$ kaç br dir?

- A) 2 B) $\frac{5}{2}$ C) 3 D) $\frac{7}{2}$ E) 4

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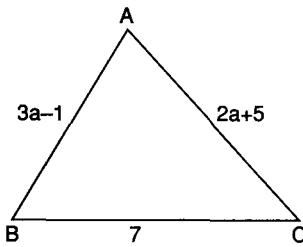
1)



Şekilde verilene göre en uzun kenar aşağıdakilerden hangisidir?

- A) a B) b C) c D) d E) e

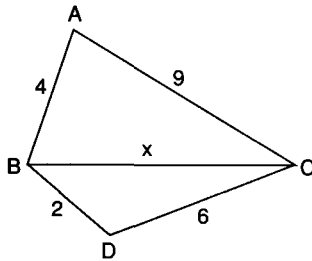
2)



Şekilde verilene göre a'nın alabileceği en büyük tamsayı değeri kaçtır?

- A) 12 B) 13 C) 14 D) 15 E) 16

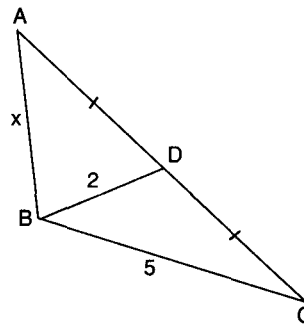
3)



Şekilde $|BD| = 2$ br, $|AB| = 4$ br, $|DC| = 6$ br ve $|AC| = 9$ br ise $|BC| = x$ in alabileceği tamsayı değerlerinin toplamı kaçtır?

- A) 21 B) 19 C) 17 D) 15 E) 13

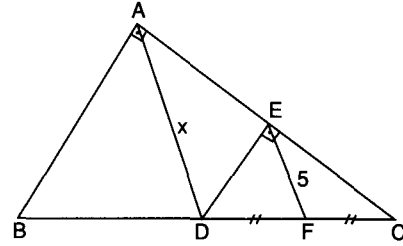
4)



Şekildeki ABC üçgeninde [BD] kenarortay, $|AC| = 8$ br, $|BD| = 2$ br ve $|BC| = 5$ br ise $|AB| = x$ kaç br dir?

- A) 4 B) $\sqrt{15}$ C) $\sqrt{13}$ D) $2\sqrt{3}$ E) $2\sqrt{2}$

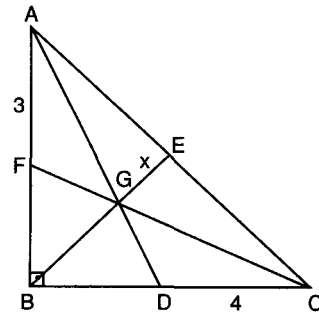
5)



Şekilde $[BA] \perp [AC]$, $[DE] \perp [AC]$, $|BD| = |DC|$, $|DF| = |FC|$ ve $|EF| = 5$ br ise $|AD| = x$ kaç br dir?

- A) 15 B) 12 C) 10 D) 8 E) 5

6)



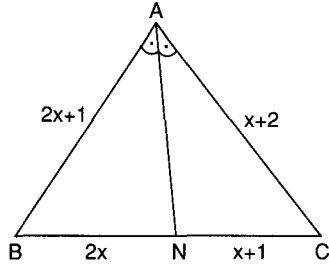
Şekildeki ABC diküçgeninde G noktası ağırlık merkezi, $|AF| = 3$ br ve $|DC| = 4$ br ise $|GE| = x$ kaç br dir?

- A) $\frac{8}{3}$ B) $\frac{7}{3}$ C) $\frac{5}{3}$ D) $\frac{3}{2}$ E) 1

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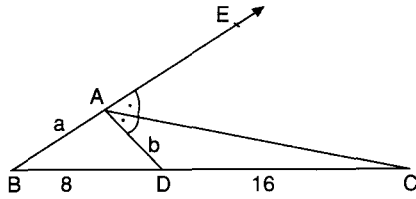
7)



Şekildeki ABC üçgeninde [AN] açıortay ,
 $|AB| = 2x+1$ br, $|BN| = 2x$ br,
 $|AC| = x+2$ br ve $|NC| = x+1$ br ise
 $|AN|$ kaç br dir?

- A) $\sqrt{5}$ B) $2\sqrt{2}$ C) 3 D) $2\sqrt{3}$ E) 4

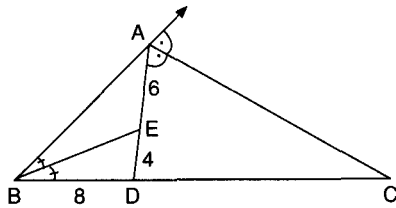
8)



Şekildeki ABC üçgeninde
 $m(\widehat{DAC}) = m(\widehat{CAE})$, $|BD| = 8$ br,
 $|DC| = 16$ br, $|AB| = a$ br ve $|AD| = b$ br ise
 $|AD| = b$ nin en küçük tamsayı değeri için
 a kaç br dir?

- A) 8 B) 6 C) 5 D) 4 E) 3

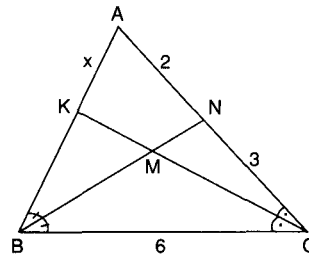
9)



Şekildeki ABD üçgeninde [BE] iç açıortay,
 [AC] dış açıortay , $|AE| = 6$ br, $|ED| = 4$ br ve
 $|BD| = 8$ br ise $\frac{|DC| - |AB|}{4}$ kaçtır?

- A) 7 B) $\frac{25}{4}$ C) 5 D) $\frac{18}{4}$ E) $\frac{15}{4}$

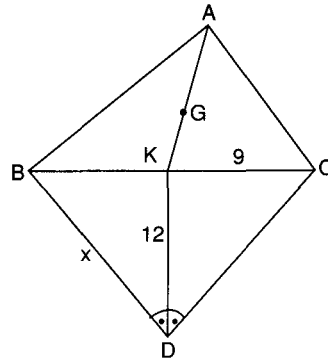
10)



Şekildeki ABC
 üçgeninde [BN]
 ve [CK] açıortay,
 $|AN| = 2$ br,
 $|NC| = 3$ br ve
 $|BC| = 6$ br ise
 $|AK| = x$ kaç
 br dir?

- A) 3 B) $\frac{5}{2}$ C) $\frac{25}{11}$ D) 2 E) $\frac{20}{11}$

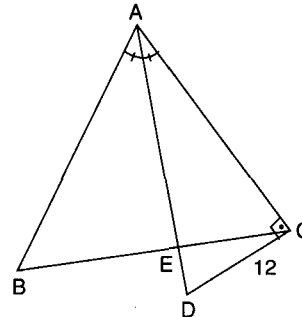
11)



Şekilde ABC üçgeninin ağırlık merkezi
 G noktası , $m(\widehat{BDK}) = m(\widehat{KDC})$,
 $|KC| = 9$ br ve $|KD| = 12$ br ise
 $|BD| = x$ kaç br dir?

- A) 9 B) 10 C) 12 D) 15 E) 20

12)



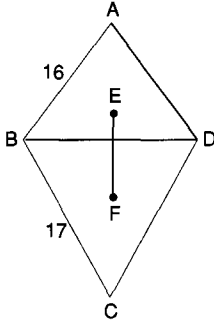
Şekildeki ABC üçgeninde [AD] açıortay ,
 $[AD] \cap [BC] = \{E\}$, $2|BE| = 3|EC|$,
 $[CA] \perp [CD]$, $|AB| + |AC| = 40$ br ve
 $|CD| = 12$ br ise $|DA|$ kaç br dir?

- A) $10\sqrt{2}$ B) 15 C) 20 D) 25 E) 26

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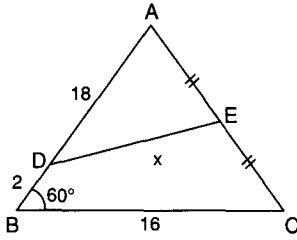
1)



Şekildeki ABCD deltoidinde ABD eşkenar üçgendir. $|AB| = 16$ br ve $|BC| = 17$ br ise üçgenlerin ağırlık merkezleri arasındaki uzaklık $|EF|$ kaç br dir?

- A) $3 + 3\sqrt{3}$ B) $\frac{5}{3} + 4\sqrt{3}$ C) $\frac{8\sqrt{3}}{3} + 5$
D) $5\sqrt{3} + \frac{8}{3}$ E) $5 + 3\sqrt{3}$

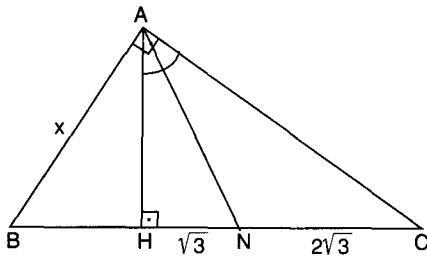
2)



Şekildeki ABC üçgeninde $|AE| = |EC|$, $|AD| = 18$ br, $|BD| = 2$ br, $|BC| = 16$ br ve $m(\widehat{ABC}) = 60^\circ$ ise $|DE| = x$ kaç br dir?

- A) $4\sqrt{3}$ B) 8 C) $8\sqrt{2}$ D) $8\sqrt{3}$ E) $16\sqrt{2}$

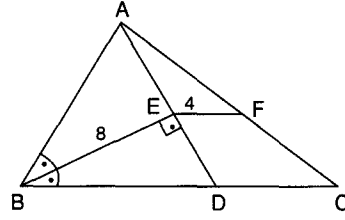
3)



Şekilde BAC diküçgeninde, [AN] HAC açısının açıortayıdır. $[AH] \perp [BC]$, $|HN| = \sqrt{3}$ br, $|NC| = 2\sqrt{3}$ br ise $|AB| = x$ kaç br dir?

- A) $4\sqrt{3}$ B) $3\sqrt{3}$ C) $2\sqrt{3}$ D) $2\sqrt{2}$ E) $\sqrt{3}$

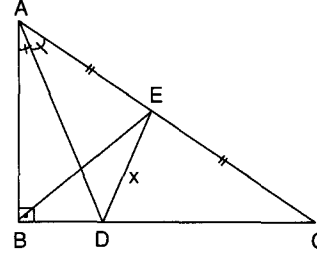
4)



Şekildeki ABC üçgeninde [BE] açıortay, $[BE] \perp [AD]$, $[EF] \parallel [BC]$, $|BC| = 18$ br, $|BE| = 8$ br ve $|EF| = 4$ br ise $|AD|$ kaç br dir?

- A) 9 B) 10 C) 12 D) 14 E) 16

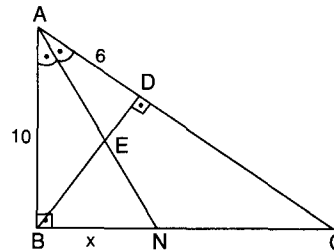
5)



Şekildeki ABC diküçgeninde [AD] açıortay, $|AE| = |EC|$, $|BC| = 8$ br ve $|AB| = 6$ br ise $|DE| = x$ kaç br dir?

- A) 3 B) $\sqrt{10}$ C) 4 D) $\frac{9}{2}$ E) $4\sqrt{2}$

6)



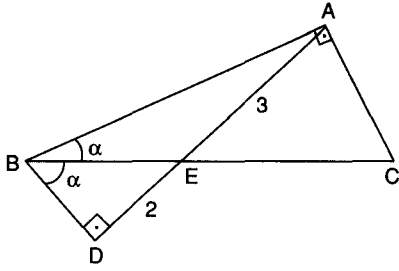
Şekildeki ABC diküçgeninde [AN] açıortay, $[AB] \perp [BC]$, $[BD] \perp [AC]$, $|AB| = 10$ br ve $|AD| = 6$ br ise $|BN| = x$ kaç br dir?

- A) 6 B) 5 C) 4 D) 3 E) 2

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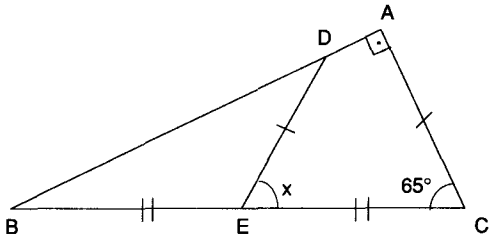
7)



Şekilde $m(\widehat{BAC}) = 90^\circ$, $m(\widehat{BDA}) = 90^\circ$,
 $m(\widehat{ABC}) = m(\widehat{CBD})$, $|DE| = 2$ br ve
 $|AE| = 3$ br ise $|BC|$ kaç br dir?

- A) 6 B) $3\sqrt{6}$ C) 8 D) $4\sqrt{6}$ E) 10

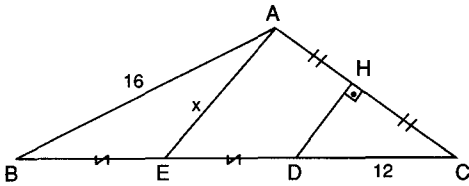
8)



Şekildeki ABC diküçgeninde
 $m(\widehat{ACB}) = 65^\circ$, $|DE| = |AC|$ ve $|BE| = |EC|$ ise
 $m(\widehat{DEC}) = x$ kaç derecedir?

- A) 40 B) 45 C) 50 D) 55 E) 65

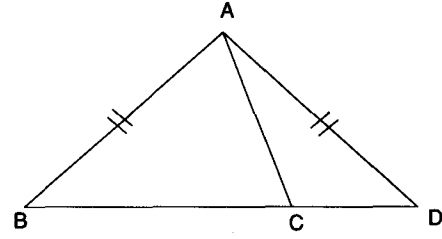
9)



Şekildeki ABC üçgeninde
 $m(\widehat{BAC}) = 90^\circ + m(\widehat{ACB})$, $[DH] \perp [AC]$
 $|AH| = |HC|$ ve $|BE| = |ED|$ dir.
 $|DC| = 12$ br ve $|AB| = 16$ br ise
 $|AE| = x$ kaç br dir?

- A) 10 B) 9 C) 8 D) 7 E) 6

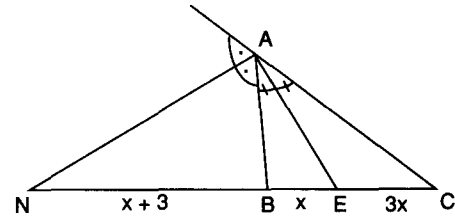
10)



Şekilde $|BA| = |AD|$ olan ABD üçgeninin
 çevresi diğer iki üçgenin çevreleri toplamın-
 dan 8 br eksik ise $|AC|$ kaç br dir?

- A) 3 B) 4 C) 5 D) 6 E) 7

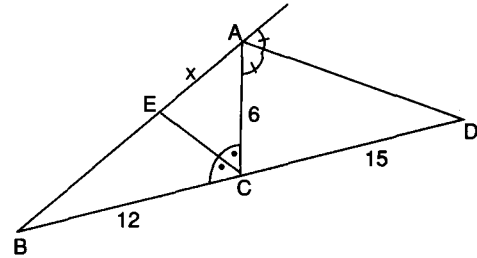
11)



Şekildeki ABC üçgeninde [AE] iç açıortay
 [AN] dış açıortaydır.
 $|NB| = x + 3$ br, $|BE| = x$ br ve
 $|EC| = 3x$ br ise $|BC|$ kaç br dir?

- A) 6 B) 8 C) 12 D) 16 E) 20

12)



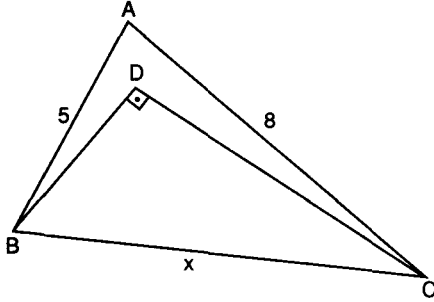
Şekildeki ABC üçgeninde [CE] iç açıortay,
 [AD] dış açıortaydır.
 $|BC| = 12$ br, $|CA| = 6$ br ve $|CD| = 15$ br ise
 $|AE| = x$ kaç br dir?

- A) 3,2 B) 3,6 C) 4,2 D) 4,8 E) 5,2

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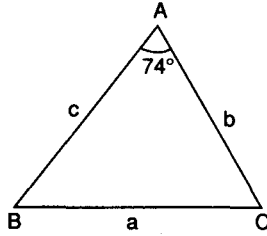
1)



Şekildeki ABC üçgeninde $[BD] \perp [AC]$,
 $|AB| = 5$ br ve $|AC| = 8$ br ise
 $|BC| = x$ in en büyük tamsayı değeri
kaçtır?

- A) 8 B) 9 C) 10 D) 11 E) 12

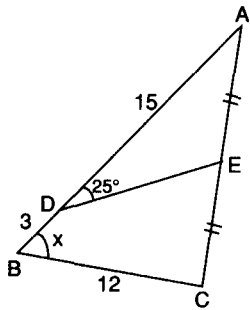
2)



Şekildeki ABC üçgeninde $|AB| > |AC|$ ve
 $m(\widehat{BAC}) = 74^\circ$ ise
ACB açısının ölçüsünün en küçük
tamsayı değeri kaçtır?

- A) 51 B) 52 C) 53 D) 54 E) 56

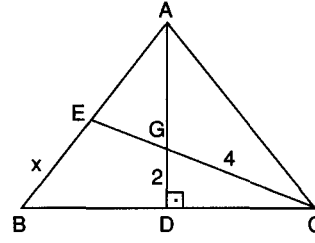
3)



Şekildeki ABC üçgeninde
 $m(\widehat{ADE}) = 25^\circ$,
 $|AE| = |EC|$,
 $|BC| = 12$ br,
 $|AD| = 15$ br ve
 $|DB| = 3$ br ise
 $m(\widehat{ABC}) = x$ kaç
derecedir?

- A) 35 B) 40 C) 45 D) 50 E) 55

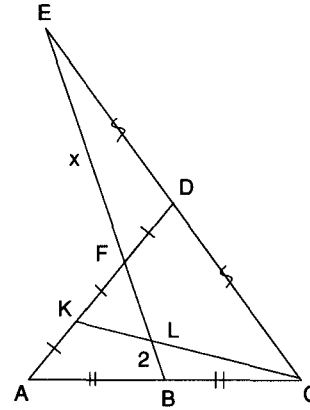
4)



Şekildeki ABC üçgeninde G noktası ağırlık merkezi,
 $[BG] \perp [AC]$,
 $|GD| = 2$ br ve
 $|GC| = 4$ br ise
 $|BE| = x$ kaç
br dir?

- A) $2\sqrt{2}$ B) 3 C) $2\sqrt{3}$ D) $3\sqrt{3}$ E) 6

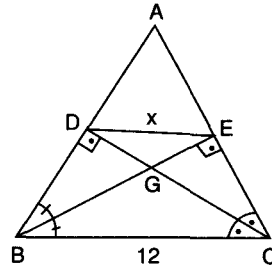
5)



Şekilde
 $|AB| = |BC|$,
 $|CD| = |DE|$,
 $|AK| = |KF| = |FD|$
ve $|LB| = 2$ br ise
 $|EF| = x$ kaç
br dir?

- A) 4 B) 6 C) 8 D) 10 E) 12

6)



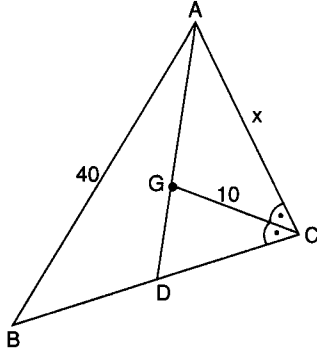
Şekildeki ABC üçgeninde $[BE] \perp [AC]$,
 $[CD] \perp [AB]$, $[CD]$ ve $[BE]$ ağırlık ve
 $|BC| = 12$ br ise $|DE| = x$ kaç br dir?

- A) 3 B) 4 C) 5 D) 6 E) 8

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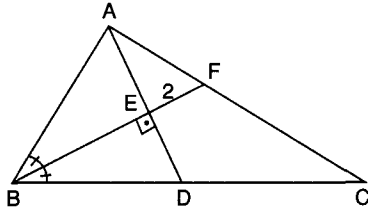
7)



Şekildeki ABC üçgeninde G ağırlık merkezi ve [CG] iç açıortaydır. $|AB| = 40$ br ve $|CG| = 10$ br ise $|AC| = x$ kaç br dir?

- A) 15 B) 20 C) 25 D) 30 E) 35

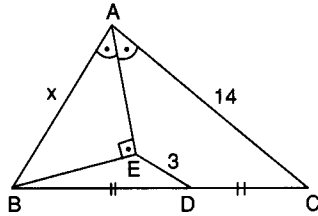
8)



Şekildeki ABC üçgeninde [BF] açıortay, $[BF] \perp [AD]$, $|AB| = |DC|$ ve $|EF| = 2$ br ise $|BE|$ kaç br dir?

- A) 4 B) 5 C) 6 D) 7 E) 8

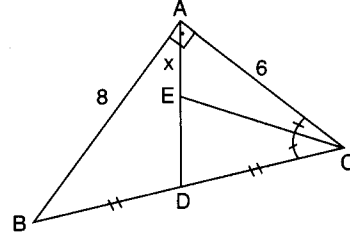
9)



Şekildeki ABC üçgeninde $[AE] \perp [BE]$, $|BD| = |DC|$, [AE] açıortay, $|ED| = 3$ br ve $|AC| = 14$ br ise $|AB| = x$ kaç br dir?

- A) 6 B) 6,5 C) 7 D) 7,5 E) 8

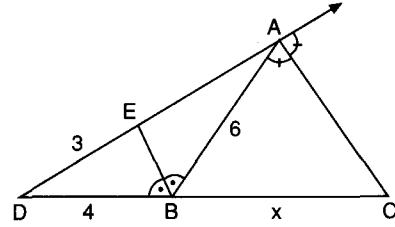
10)



Şekildeki ABC diküçgeninde [CE] iç açıortay, $|BD| = |DC|$, $|AB| = 8$ br ve $|AC| = 6$ br ise $|AE| = x$ kaç br dir?

- A) $\frac{10}{3}$ B) $\frac{30}{11}$ C) $\frac{25}{11}$ D) $\frac{16}{9}$ E) $\frac{8}{5}$

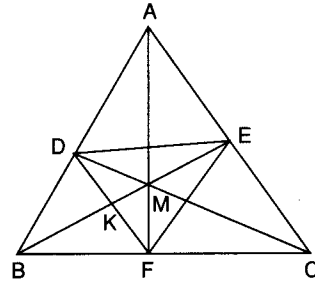
11)



Şekildeki ABD üçgeninde [BE] iç açıortay, [AC] dış açıortaylardır. $|DE| = 3$ br, $|AB| = 6$ br ve $|DB| = 4$ br ise $|BC| = x$ kaç br dir?

- A) 16 B) 15 C) 14 D) 13 E) 12

12)



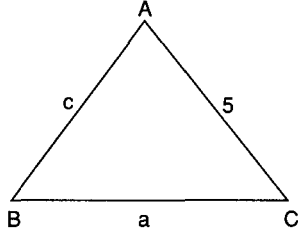
Şekilde M noktası ABC üçgeninde diklik merkezi, $|DE| = 8$ br, $|DF| = 6$ br ve $|FE| = 4$ br ise $|KE|$ kaç br dir?

- A) $2\sqrt{6}$ B) $3\sqrt{2}$ C) $4\sqrt{3}$ D) 5 E) $5\sqrt{5}$

KAVRAM YAYINLARI

KAVRAM YAYINLARI

1)



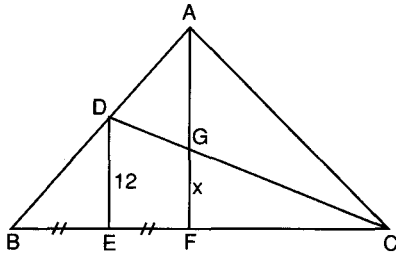
Şekildeki ABC üçgeninin kenar uzunlukları birer tamsayıdır.

$m(\hat{B}) < m(\hat{C})$ ve $|AC| = 5$ br ise

üçgenin çevresi en az kaç br dir?

- A) 12 B) 13 C) 14 D) 15 E) 17

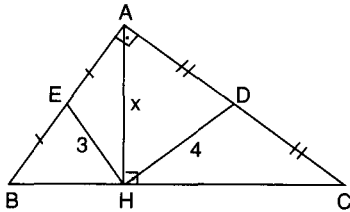
2)



Şekildeki ABC üçgeninde G noktası ağırlık merkezi, $|BE| = |EF|$ ve $|ED| = 12$ br ise $|GF| = x$ kaç br dir?

- A) 4 B) 5 C) 6 D) 8 E) 10

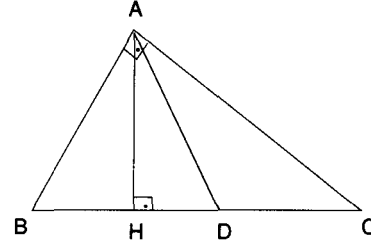
3)



Şekildeki ABC diküçgeninde, $[AH] \perp [BC]$, E ve D bulundukları kenarların orta noktaları, $|EH| = 3$ br ve $|HD| = 4$ br ise $|AH| = x$ kaç br dir?

- A) 2,4 B) 3,6 C) 4,8 D) 6,4 E) 7,2

4)

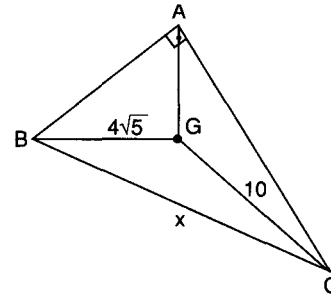


Şekildeki ABC diküçgeninde $[AD]$ kenarortay ve

$\frac{|AH|}{|AD|} = \frac{4}{5}$ ise $\frac{|AB|}{|AC|}$ kaçtır?

- A) $\frac{3}{2}$ B) $\frac{4}{3}$ C) $\frac{4}{5}$ D) $\frac{1}{2}$ E) $\frac{1}{3}$

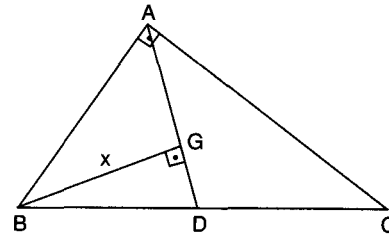
5)



Şekildeki ABC üçgeninde G noktası ağırlık merkezi, $[AB] \perp [AC]$, $|GC| = 10$ br ve $|BG| = 4\sqrt{5}$ br ise $|BC| = x$ kaç br dir?

- A) 30 B) 27 C) 24 D) 18 E) 12

6)



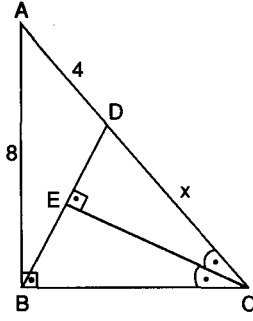
Şekildeki ABC diküçgeninde G noktası ağırlık merkezi, $[BG] \perp [AD]$ ve $|AD| = 6$ br ise $|BG| = x$ kaç br dir?

- A) $2\sqrt{5}$ B) $3\sqrt{3}$ C) $4\sqrt{2}$ D) $4\sqrt{3}$ E) $6\sqrt{2}$

KAVRAM YAYINLARI

KAVRAM YAYINLARI

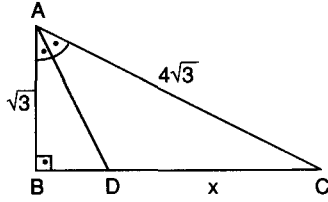
7)



Şekilde $[AB] \perp [BC]$,
 $[CE] \perp [BD]$,
 $[CE]$ açıortay ,
 $|AB| = 8$ br ve
 $|AD| = 4$ br ise
 $|CD| = x$ kaç br dir?

- A) 5 B) 6 C) 7 D) 8 E) 10

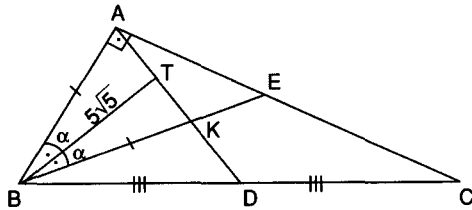
8)



Şekildeki ABC diküçgeninde $[AD]$ açıortay,
 $|AB| = \sqrt{3}$ br ve $|AC| = 4\sqrt{3}$ br ise
 $|DC| = x$ kaç br dir?

- A) $3\sqrt{5}$ B) $\frac{12\sqrt{5}}{5}$ C) $2\sqrt{5}$
 D) $\frac{3\sqrt{5}}{5}$ E) $\frac{\sqrt{5}}{5}$

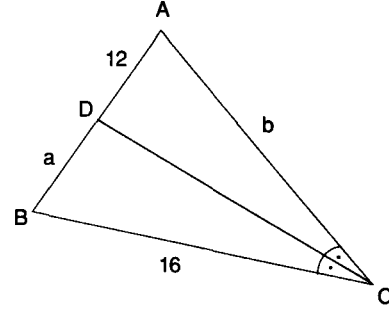
9)



Şekildeki ABC diküçgeninde
 $[AD]$ ve $[BE]$ kenarortay , $|AB| = |BK|$,
 $m(\widehat{ABT}) = m(\widehat{TBE})$ ve $|BT| = 5\sqrt{5}$ br ise
 $|BC|$ kaç br dir?

- A) 15 B) 20 C) 25 D) 30 E) 35

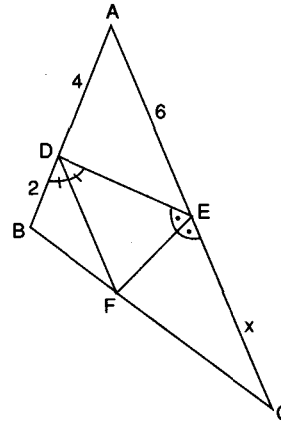
10)



Şekildeki ABC üçgeninde $[CD]$ açıortay ,
 $|BC| = 16$ br , $|AD| = 12$ br , $|BD| = a$ br ,
 $|AC| = b$ br ve $b - a = 14$ br ise
 $a^2 + b^2$ kaçtır?

- A) 580 B) 400 C) 402 D) 404 E) 441

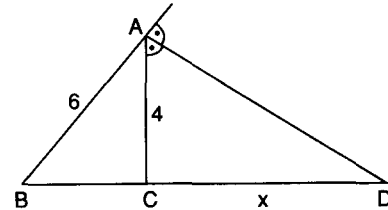
11)



Şekildeki ABC üçgeninde
 $m(\widehat{BDF}) = m(\widehat{FDE})$,
 $m(\widehat{FEC}) = m(\widehat{FED})$,
 $2|BF| = |FC|$,
 $|AD| = 4$ br ,
 $|BD| = 2$ br ve
 $|AE| = 6$ br ise
 $|EC| = x$ kaç
 br dir?

- A) 6,5 B) 6 C) 5,5 D) 4 E) 3

12)



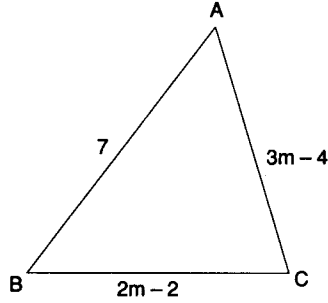
Şekildeki ABC üçgeninde $[AD]$ dış açıortay ,
 $|AB| = 6$ br , $|AC| = 4$ br ve
 $|CD| = x$ br ise x in alabileceği en büyük
 tamsayı değeri kaçtır?

- A) 16 B) 17 C) 18 D) 19 E) 20

KAVRAM YAYINLARI

KAVRAM YAYINLARI

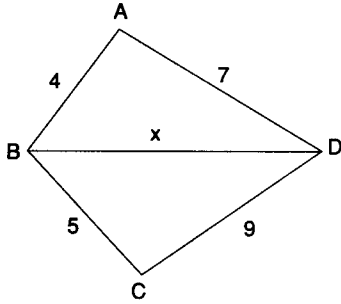
1)



Şekildeki ABC üçgeninde verilene göre m nin kaç farklı tamsayı değeri vardır?

- A) 5 B) 6 C) 7 D) 8 E) 9

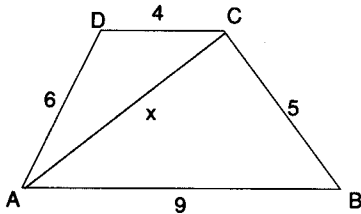
2)



Şekilde $|AB| = 4$ br, $|AD| = 7$ br, $|BC| = 5$ br ve $|CD| = 9$ br ise $|BD| = x$ kaç farklı tamsayı değeri alabilir?

- A) 4 B) 5 C) 6 D) 7 E) 8

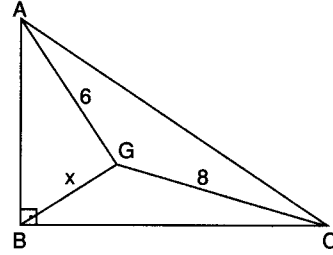
3)



Şekildeki ABCD dörtgeninde $|AB| = 9$ br, $|AD| = 6$ br, $|BC| = 5$ br ve $|DC| = 4$ br ise $|AC| = x$ aşağıdaki aralıklardan hangisine aittir?

- A) $2 < x < 14$ B) $2 < x < 4$ C) $4 < x < 10$
D) $4 < x < 14$ E) $4 < x < 9$

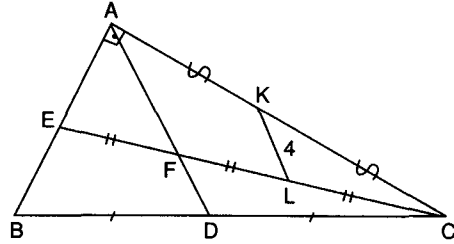
4)



Şekildeki ABC diküçgeninde G noktası ağırlık merkezi, $|AG| = 6$ br ve $|CG| = 8$ br ise $|BG| = x$ kaç br dir?

- A) $\sqrt{5}$ B) $2\sqrt{5}$ C) $3\sqrt{5}$ D) $4\sqrt{5}$ E) $5\sqrt{5}$

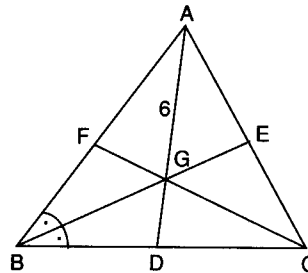
5)



Şekildeki ABC diküçgeninde, $|BD| = |DC|$, $|EF| = |FL| = |LC|$, $|AK| = |KC|$ ve $|KL| = 4$ br ise $|BC|$ kaç br dir?

- A) 18 B) 20 C) 22 D) 24 E) 26

6)



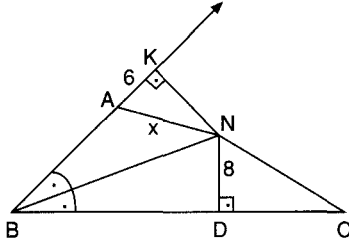
Şekildeki ABC üçgeninde G noktası ağırlık merkezi $[BE]$ açıortay ve $|AG| = 6$ br ise $|FC|$ kaç br dir?

- A) 11 B) 10 C) 9 D) 8 E) 7

KAVRAM YAYINLARI

KAVRAM YAYINLARI

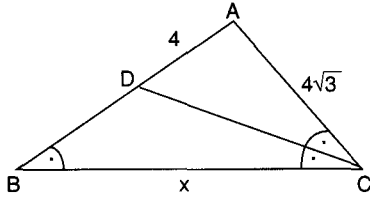
7)



Şekilde $[NK] \perp [BK]$, $[ND] \perp [BC]$,
 $[BN]$, $\angle KBC$ açısının açıortayıdır.
 $|AK| = 6$ br, $|DN| = 8$ br ise
 $|AN| = x$ kaç br dir?

- A) 9 B) 10 C) 11 D) 12 E) 13

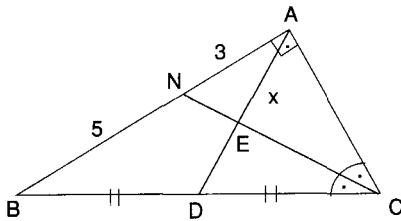
8)



Şekildeki ABC üçgeninde
 $m(\widehat{ACD}) = m(\widehat{DCB}) = m(\widehat{ABC})$,
 $|AC| = 4\sqrt{3}$ br ve $|AD| = 4$ br ise
 $|BC| = x$ kaç br dir?

- A) 4 B) $4\sqrt{3}$ C) 6 D) $6\sqrt{3}$ E) $8\sqrt{3}$

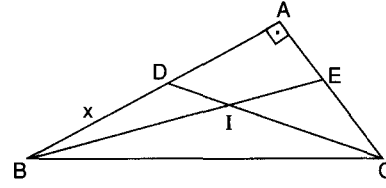
9)



Şekildeki ABC diküçgeninde
 $[AD]$ kenarortay, $[NC]$ açıortay
 $|AN| = 3$ br ve $|NB| = 5$ br ise
 $|AE| = x$ kaç br dir?

- A) $\frac{3}{11}$ B) $\frac{5}{11}$ C) $\frac{6}{11}$ D) $\frac{25}{11}$ E) $\frac{30}{11}$

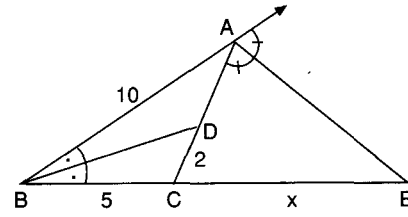
10)



Şekildeki ABC diküçgeninde
I noktası iç açıortayların kesim noktasıdır.
 $|CI| = 2|DI|$ ve $|AC| = 6$ br ise
 $|DB| = x$ kaç br dir?

- A) 3 B) 4 C) 5 D) 6 E) 8

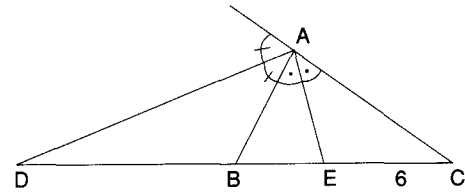
11)



Şekildeki ABC üçgeninde $[AE]$ dış açıortay,
 $[BD]$ iç açıortay, $|AB| = 10$ br, $|BC| = 5$ br ve
 $|CD| = 2$ br ise $|CE| = x$ kaç br dir?

- A) 6 B) $\frac{13}{2}$ C) 7 D) $\frac{15}{2}$ E) 8

12)



Şekildeki ABC üçgeninde $[AD]$ dış açıortay,
 $[AE]$ iç açıortaydır.
 $|EC| = 6$ br ve $3|AB| = 2|AC|$ ise
 $|DB| - |BE|$ kaç br dir?

- A) 20 B) 18 C) 16 D) 10 E) 6

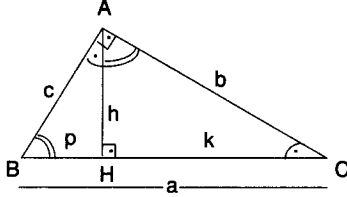
KAVRAM YAYINLARI

KAVRAM YAYINLARI



DİKÜÇGENDE METRİK BAĞINTILAR

$m(\widehat{BAC}) = 90^\circ$ olan ABC üçgeninde



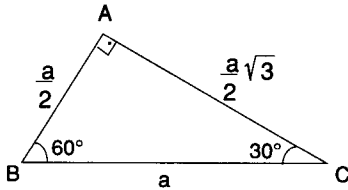
$$a^2 = b^2 + c^2 \text{ (Pisagor bağıntısı)}$$

$$\left. \begin{aligned} h^2 &= p \cdot k \\ b^2 &= k \cdot a \\ c^2 &= p \cdot a \end{aligned} \right\} \text{Öklit bağıntısı}$$

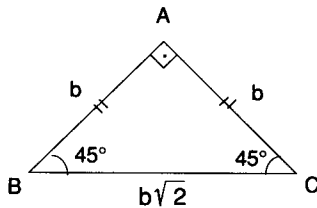
$$\frac{1}{h^2} = \frac{1}{b^2} + \frac{1}{c^2}$$

$$\vartheta_a = \frac{a}{2}$$

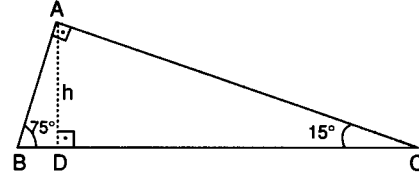
Diküçgende 30° nin karşısındaki kenar hipotenüsün yarısına eşittir. 60° nin karşısındaki kenar, 30° nin karşısındaki kenarın $\sqrt{3}$ katına eşittir.



İkizkenar diküçgende hipotenüs dik kenarlardan birinin $\sqrt{2}$ katına eşittir.

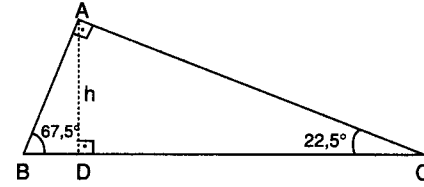


ÖZEL DİKÜÇGENLER



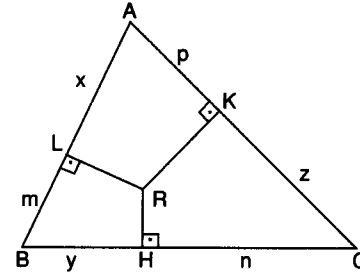
$$m(\widehat{ABC}) = 75^\circ \text{ ise}$$

$$|BC| = 4h \text{ dir.}$$



$$m(\widehat{ABC}) = 67,5^\circ \text{ ise}$$

$$|BC| = 2\sqrt{2} h \text{ dir.}$$



$$x^2 + y^2 + z^2 = m^2 + n^2 + p^2$$

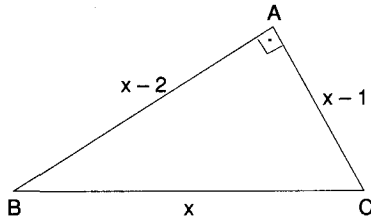
(Carnott Teoremi)

KAVRAM YAYINLARI

KAVRAM YAYINLARI



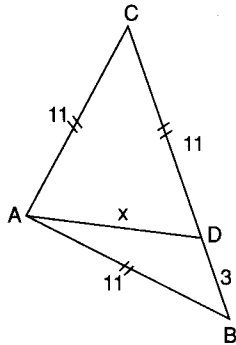
1)



Şekilde verilenlere göre
ABC diküçgeninin çevresi kaç br dir?

- A) 12 B) 13 C) 15 D) 16 E) 20

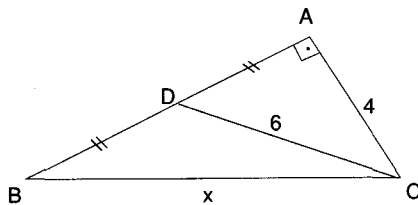
2)



Şekildeki ABC
üçgeninde
 $|AC| = |CD| = |AB| = 11$ br
ve $|BD| = 3$ br ise
 $|AD| = x$ kaç br dir?

- A) 7 B) $\sqrt{11}$
C) $2\sqrt{11}$ D) $2\sqrt{2}$
E) 11

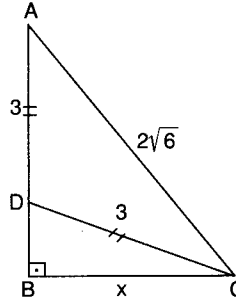
3)



Şekildeki ABC diküçgeninde $|AD| = |BD|$,
 $|DC| = 6$ br ve $|AC| = 4$ br ise
 $|BC| = x$ kaç br dir?

- A) $3\sqrt{5}$ B) $5\sqrt{2}$ C) $6\sqrt{2}$ D) 8 E) $4\sqrt{6}$

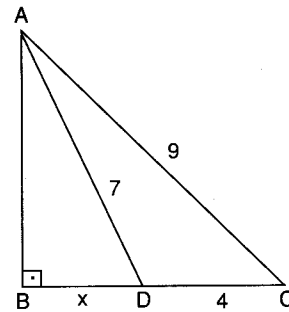
4)



Şekildeki ABC
diküçgeninde
 $|AD| = |DC| = 3$ br ve
 $|AC| = 2\sqrt{6}$ br ise
 $|BC| = x$ kaç br dir?

- A) 1 B) $\sqrt{2}$ C) $\sqrt{2} + 1$
D) $2\sqrt{2}$ E) $3\sqrt{2}$

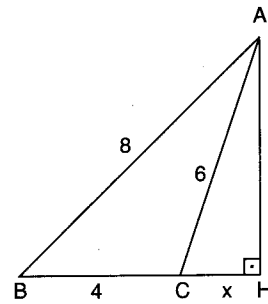
5)



Şekildeki
ABC diküçgeninde
 $|AC| = 9$ br,
 $|AD| = 7$ br ve
 $|DC| = 4$ br ise
 $|BD| = x$ kaç
br dir?

- A) $\sqrt{3}$ B) 2 C) 3 D) $2\sqrt{3}$ E) $3\sqrt{2}$

6)



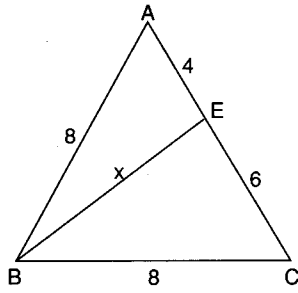
Şekilde $[AH] \perp [BH]$,
 $|AB| = 8$ br, $|AC| = 6$ br ve
 $|BC| = 4$ br ise $|CH| = x$ kaç br dir?

- A) 1 B) $\frac{3}{2}$ C) 2 D) $\frac{5}{2}$ E) 3

KAVRAM YAYINLARI

KAVRAM YAYINLARI

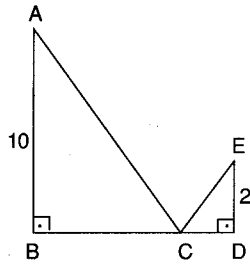
7)



Şekildeki ABC
üçgeninde
 $|AB| = |BC| = 8$ br
 $|EC| = 2$ br ve
 $|AE| = 4$ br ise
 $|BE| = x$ kaç
br dir?

- A) $\sqrt{10}$ B) $2\sqrt{5}$ C) $2\sqrt{10}$ D) $3\sqrt{5}$ E) $4\sqrt{3}$

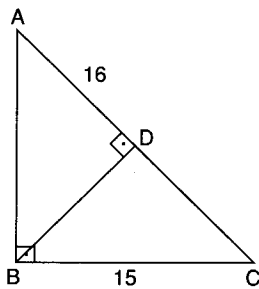
8)



Şekilde $|AB| \perp |BD|$, $|ED| \perp |BD|$,
 $|AB| = 10$ br, $|DE| = 2$ br,
 $|BD| = 5$ br ve $C \in [BD]$ ise
 $|AC| + |EC|$ toplamının en küçük değeri kaç
br dir?

- A) 7 B) 10 C) 12 D) 13 E) 15

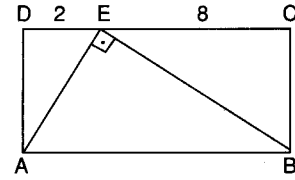
9)



Şekildeki ABC
diküçgeninde
 $[BD] \perp [AC]$,
 $|AD| = 16$ br ve
 $|BC| = 15$ br ise
ABC üçgeninin çev-
resi kaç br dir?

- A) 40 B) 48 C) 52 D) 56 E) 60

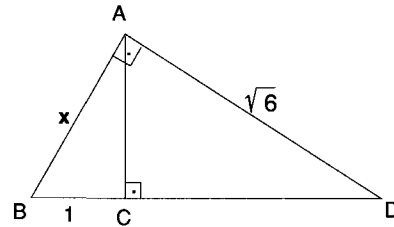
10)



Şekilde ABCD dikdörtgen,
AEB diküçgendir.
 $|DE| = 2$ br ve $|EC| = 8$ br ise
 $|AE| \cdot |BE|$ kaçtır?

- A) 32 B) 36 C) 40 D) 42 E) 56

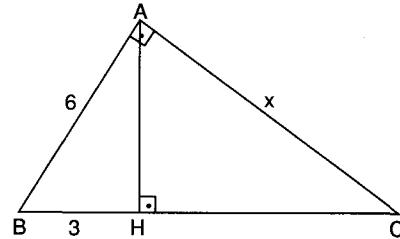
11)



Şekildeki ABD diküçgeninde $[AC] \perp [BD]$,
 $|BC| = 1$ br ve $|AD| = \sqrt{6}$ br ise
 $|AB| = x$ kaç br dir?

- A) $\sqrt{6} + 1$ B) $\sqrt{6}$ C) $\sqrt{3} + 1$
D) $\sqrt{3}$ E) 3

12)



Şekilde ABC diküçgeninde $[AH] \perp [BC]$,
 $|AB| = 6$ br ve $|BH| = 3$ br ise
 $|AC| = x$ kaç br dir?

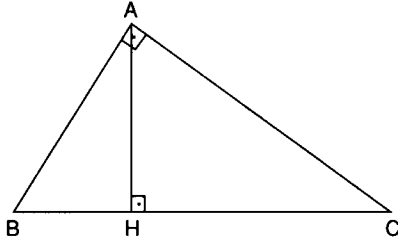
- A) $6\sqrt{3}$ B) 8 C) 9 D) $8\sqrt{2}$ E) 10

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1)

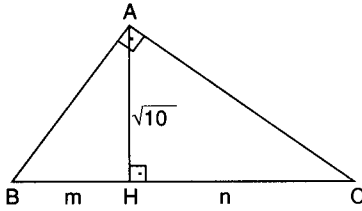


Şekildeki ABC diküçgeninde ,

$$\frac{|HC|}{|AB|} = \frac{3}{2} \text{ ise } \frac{|AB|}{|BH|} \text{ kaçtır?}$$

- A) 3 B) 2 C) $\frac{3}{2}$ D) $\frac{2}{3}$ E) $\frac{1}{2}$

2)



Şekildeki ABC üçgeninde

$[AB] \perp [AC]$ ve $[AH] \perp [BC]$ dir.

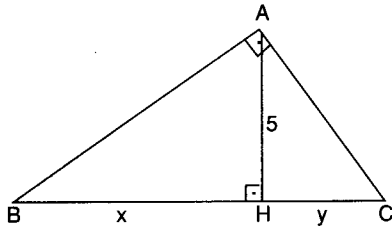
$|BH| = m$ br , $|HC| = n$ br

$m^2 + n^2 = 16$ br ve $|AH| = \sqrt{10}$ br ise

$m + n$ kaç br dir?

- A) 6 B) 7 C) 8 D) 9 E) 10

3)



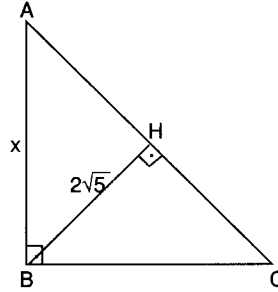
Şekilde ABC diküçgen, $[AH] \perp [BC]$,

$|BH| = x$ br , $|HC| = y$ br , $|AH| = 5$ br ve

$x^2 + y^2 = 14$ ise $A(ABC)$ kaç br² dir?

- A) 15 B) 20 C) 25 D) 30 E) 35

4)



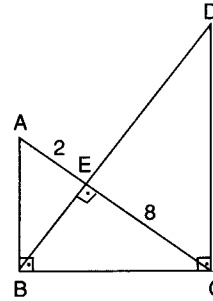
Şekilde $[AB] \perp [BC]$ ve $[BH] \perp [AC]$ dir.

$3|HC| = 2|BC|$ ve $|BH| = 2\sqrt{5}$ br ise

$|AB| = x$ kaç br dir?

- A) $2\sqrt{5}$ B) $3\sqrt{5}$ C) $4\sqrt{5}$ D) $5\sqrt{5}$ E) $6\sqrt{5}$

5)



Şekilde $[AB] \perp [BC]$,

$[CA] \perp [DB]$,

$[BC] \perp [CD]$,

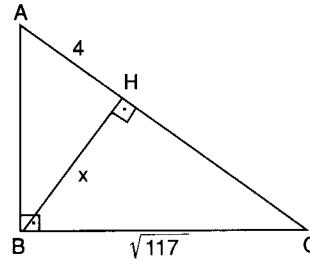
$|AE| = 2$ br ,

$|EC| = 8$ br ise

$|AB| \cdot |DC|$ kaçtır?

- A) 80 B) $20\sqrt{3}$ C) $20\sqrt{2}$ D) 20 E) 10

6)



Şekildeki ABC diküçgeninde ,

$[BH] \perp [AC]$, $|AH| = 4$ br ve

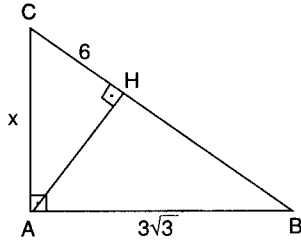
$|BC| = \sqrt{117}$ br ise $|BH| = x$ kaç br dir?

- A) 3 B) 4 C) 5 D) 6 E) 7

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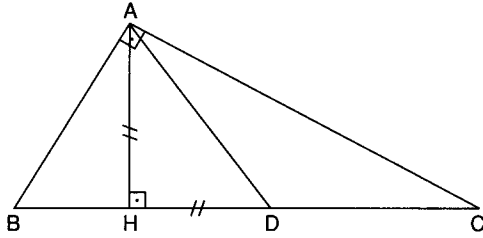
7)



Şekildeki ABC üçgeninde
 $[AC] \perp [AB]$, $[AH] \perp [BC]$ dir.
 $|CH| = 6$ br ve $|AB| = 3\sqrt{3}$ br ise
 $|AC| = x$ kaç br dir?

- A) $2\sqrt{10}$ B) $3\sqrt{5}$ C) $4\sqrt{3}$ D) $3\sqrt{6}$ E) $6\sqrt{3}$

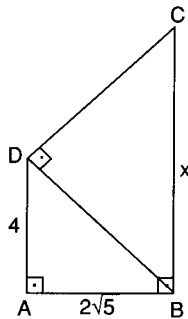
8)



Şekildeki ABC diküçgeninde $[AD]$ kenarortay
 $[AH] \perp [BC]$, $|AH| = |HD|$,
 $A(AHD) = \frac{1}{2} \text{ br}^2$ ise $|BH|$ kaç br dir?

- A) $\sqrt{2}$ B) $\sqrt{2} - 1$ C) $2\sqrt{2}$
 D) $2\sqrt{2} - 1$ E) $\sqrt{3} - 1$

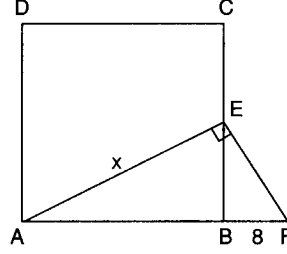
9)



Şekilde $m(\widehat{DAB}) = 90^\circ$ ve
 $m(\widehat{CDB}) = 90^\circ$ dir.
 $[CB] \perp [AB]$
 $|AD| = 4$ br ve
 $|AB| = 2\sqrt{5}$ br ise
 $|BC| = x$ kaç br dir?

- A) 6 B) $3\sqrt{5}$ C) $4\sqrt{3}$ D) $6\sqrt{2}$ E) 9

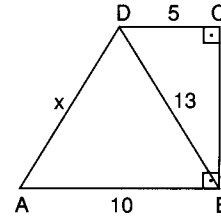
10)



Şekilde ABCD
 kare $[AE] \perp [EF]$,
 $2|EC| = |AB|$ ve
 $|BF| = 8$ br ise
 $|AE| = x$ kaç
 br dir?

- A) $12\sqrt{5}$ B) $15\sqrt{5}$ C) $16\sqrt{5}$
 D) $18\sqrt{5}$ E) $20\sqrt{5}$

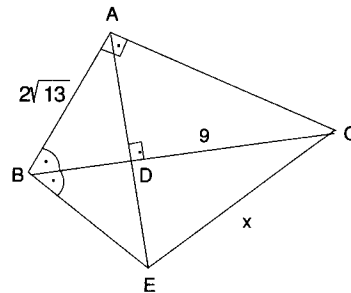
11)



Şekilde $[BC] \perp [AB]$, $[DC] \parallel [AB]$
 $|BD| = 13$ br, $|DC| = 5$ br ve
 $|AB| = 10$ br ise $|AD| = x$ kaç br dir?

- A) 5 B) 12 C) 13 D) 15 E) 16

12)



Şekilde $[AB] \perp [AC]$, $[AE] \perp [BC]$,
 $[BC]$ açıortay, $|AB| = 2\sqrt{13}$ br ve
 $|DC| = 9$ br ise $|EC| = x$ kaç br dir?

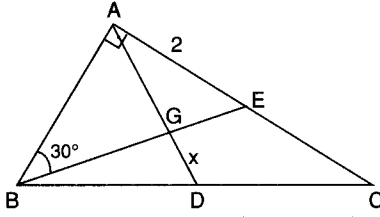
- A) $3\sqrt{13}$ B) $4\sqrt{13}$ C) $\sqrt{37}$
 D) $\sqrt{97}$ E) $\sqrt{107}$

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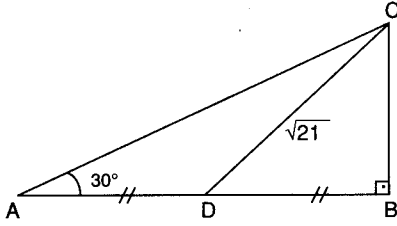
1)



Şekildeki ABC diküçgeninde G noktası ağırlık merkezidir. $m(\widehat{ABE}) = 30^\circ$ ve $|AE| = 2$ br ise $|GD| = x$ kaç br dir?

- A) $2\sqrt{7}$ B) $\sqrt{7}$ C) $\frac{2\sqrt{7}}{3}$
D) $\frac{\sqrt{7}}{2}$ E) $\frac{\sqrt{7}}{3}$

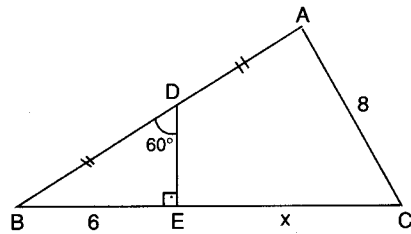
2)



Şekildeki ABC diküçgeninde $|AD| = |BD|$, $m(\widehat{CAB}) = 30^\circ$ ve $|CD| = \sqrt{21}$ br ise $|AB|$ kaç br dir?

- A) 6 B) 7 C) $7\sqrt{2}$ D) $7\sqrt{3}$ E) 9

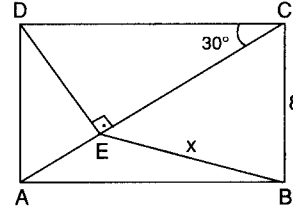
3)



Şekildeki ABC üçgeninde $m(\widehat{BDE}) = 60^\circ$, $[DE] \perp [BC]$, $|BD| = |DA|$, $|BE| = 6$ br ve $|AC| = 8$ br ise $|EC| = x$ kaç br dir?

- A) 8 B) 9 C) 10 D) 11 E) 12

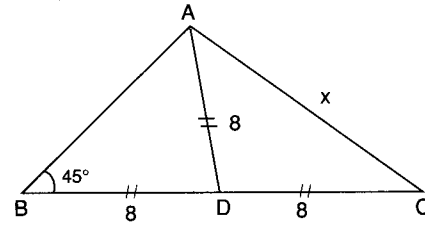
4)



Şekilde ABCD dikdörtgen, $[DE] \perp [AC]$, $m(\widehat{DCA}) = 30^\circ$ ve $|BC| = 8$ br ise $|BE| = x$ kaç br dir?

- A) $4\sqrt{3}$ B) $6\sqrt{2}$ C) $4\sqrt{7}$ D) $6\sqrt{3}$ E) $8\sqrt{2}$

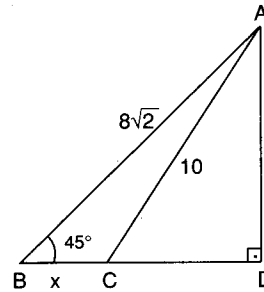
5)



Şekilde $m(\widehat{ABC}) = 45^\circ$, $|AD| = |BD| = |DC| = 8$ br ise $|AC| = x$ kaç br dir?

- A) 6 B) 8 C) $\sqrt{2}$ D) $10\sqrt{2}$ E) 16

6)



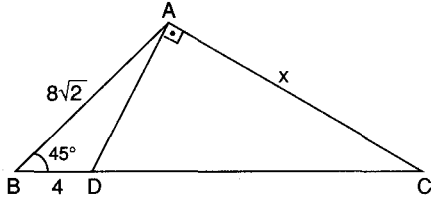
Şekildeki ABD diküçgeninde $m(\widehat{ABD}) = 45^\circ$, $|AB| = 8\sqrt{2}$ br ve $|AC| = 10$ br ise $|BC| = x$ kaç br dir?

- A) 1 B) $\sqrt{2}$ C) $\sqrt{3}$ D) 2 E) 3

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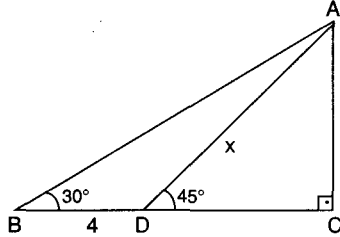
7)



Şekildeki ABC üçgeninde $m(\widehat{ABC}) = 45^\circ$,
 $[AD] \perp [AC]$, $|BD| = 4$ br,
 $|AB| = 8\sqrt{2}$ br ise $|AC| = x$ kaç br dir?

- A) $3\sqrt{5}$ B) $5\sqrt{5}$ C) $8\sqrt{5}$ D) $6\sqrt{3}$ E) $7\sqrt{3}$

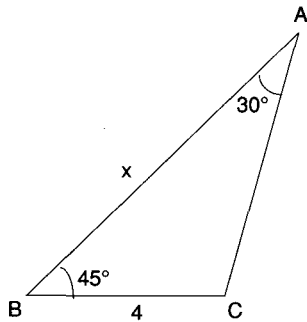
8)



Şekildeki ABC diküçgeninde
 $m(\widehat{ABC}) = 30^\circ$, $m(\widehat{ADC}) = 45^\circ$ ve
 $|BD| = 4$ br ise $|AD| = x$ kaç br dir?

- A) $2\sqrt{6} + 2\sqrt{2}$ B) $2\sqrt{6} - 2$ C) $2\sqrt{6} - \sqrt{2}$
 D) $2\sqrt{6} - 1$ E) $2\sqrt{6}$

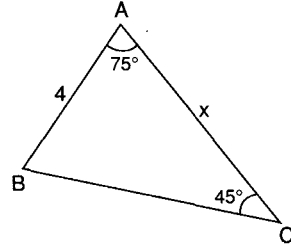
9)



Şekildeki ABC
 üçgeninde
 $m(\widehat{ABC}) = 45^\circ$,
 $m(\widehat{BAC}) = 30^\circ$ ve
 $|BC| = 4$ br ise
 $|AB| = x$ kaç
 br dir?

- A) $2\sqrt{2} + 2\sqrt{6}$ B) $2\sqrt{3} + 1$ C) $2\sqrt{6} + 2$
 D) $6\sqrt{2}$ E) 8

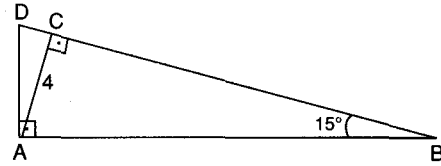
10)



Şekildeki ABC üçgeninde
 $m(\widehat{BAC}) = 75^\circ$, $m(\widehat{ACB}) = 45^\circ$ ve
 $|AB| = 4$ br ise $|AC| = x$ kaç br dir?

- A) 2 B) $2\sqrt{3}$ C) $4\sqrt{2}$ D) $2\sqrt{6}$ E) $4\sqrt{6}$

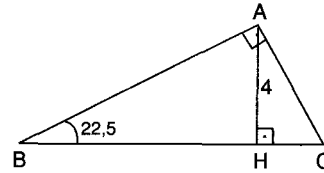
11)



Şekildeki ABD diküçgeninde $[AC] \perp [DB]$,
 $m(\widehat{ABD}) = 15^\circ$ ve $|AC| = 4$ br ise
 $|BD| + |AC|$ kaç br dir?

- A) 24 B) 20 C) 16 D) 12 E) 10

12)



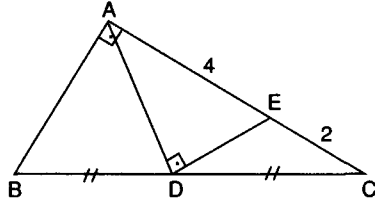
Şekildeki ABC diküçgeninde
 $m(\widehat{ABC}) = 22,5^\circ$ ve
 $|AH| = 4$ br ise $|BC|$ kaç br dir?

- A) 4 B) $4\sqrt{2}$ C) $8\sqrt{2}$
 D) $8\sqrt{2} - 1$ E) $8\sqrt{2} - 4$

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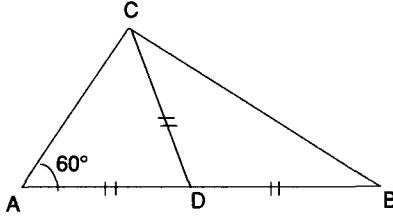
1)



Şekildeki ABC diküçgeninde $[AD] \perp [DE]$, $|BD| = |DC|$, $|EC| = 2$ br ve $|AE| = 4$ br ise $|BC|$ kaç br dir?

- A) $4\sqrt{3}$ B) $5\sqrt{3}$ C) $6\sqrt{3}$ D) $7\sqrt{3}$ E) $8\sqrt{3}$

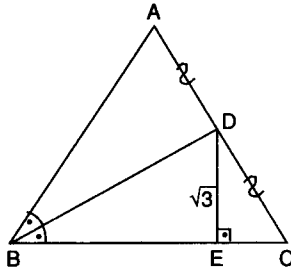
2)



Şekildeki ABC üçgeninde $m(\widehat{CAB}) = 60^\circ$, $|CD| = |AD| = |DB|$ ve B köşesinin $[AC]$ kenarına uzaklığı $3\sqrt{3}$ br ise $|AB|$ kaç br dir?

- A) $\sqrt{3}$ B) 3 C) $3\sqrt{3}$ D) 6 E) $4\sqrt{3}$

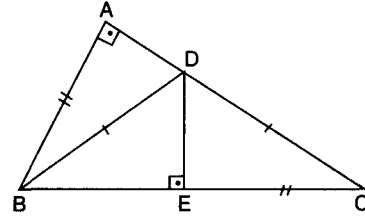
3)



Şekildeki ABC üçgeninde $[BD]$ iç açıortay, $[DE] \perp [BC]$, $|AB| = |AC|$, $|AD| = |DC|$ ve $|DE| = \sqrt{3}$ br ise $\angle(ABC)$ kaç br dir?

- A) 10 B) 12 C) 14 D) 16 E) 18

4)

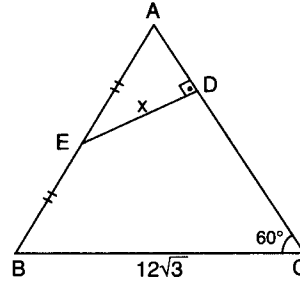


Şekildeki ABC diküçgeninde $[DE] \perp [BC]$, $|AB| = |EC|$, ve $|BD| = |DC|$ ise

$\frac{|BE|}{|DC|}$ kaçtır?

- A) $\frac{\sqrt{3}}{3}$ B) $\frac{\sqrt{3}}{2}$ C) $\frac{2\sqrt{3}}{3}$
D) $\sqrt{3}$ E) 2

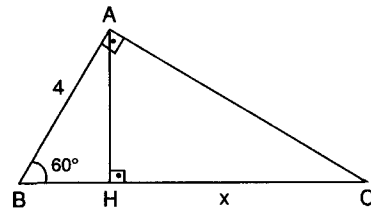
5)



Şekildeki ABC üçgeninde $[ED] \perp [AC]$, $|AE| = |EB|$, $m(\widehat{ACB}) = 60^\circ$ ve $|BC| = 12\sqrt{3}$ br ise $|ED| = x$ kaç br dir?

- A) $2\sqrt{3}$ B) $3\sqrt{3}$ C) 6 D) $4\sqrt{3}$ E) 9

6)



Şekildeki ABC diküçgeninde $[AH] \perp [BC]$,

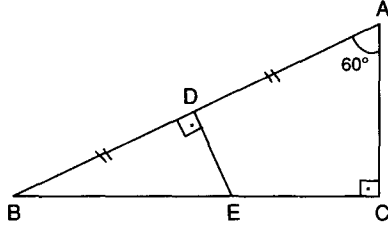
$m(\widehat{ABC}) = 60^\circ$ ve $|AB| = 4$ br ise $|HC| = x$ kaç br dir?

- A) 4 B) 5 C) 6 D) 7 E) 8

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7)

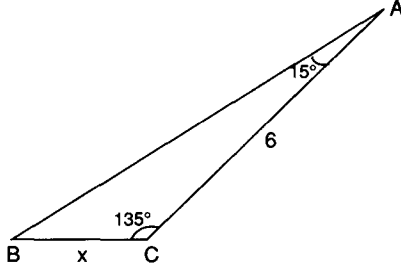


Şekildeki ABC diküçgeninde $[AB] \perp [DE]$,
 $|BD| = |DA|$ ve $m(\widehat{BAC}) = 60^\circ$ ise

$\frac{|BE|}{|BC|}$ kaçtır?

- A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) $\frac{2}{3}$ D) 1 E) $\frac{3}{2}$

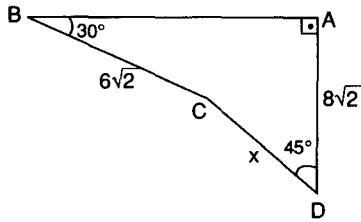
8)



Şekildeki ABC üçgeninde $m(\widehat{BAC}) = 15^\circ$,
 $m(\widehat{ACB}) = 135^\circ$ ve $|AC| = 6$ br ise
 $|BC| = x$ kaç br dir?

- A) $\sqrt{6} + \sqrt{2}$ B) $2\sqrt{6} - \sqrt{2}$ C) $3(\sqrt{6} - \sqrt{2})$
 D) $3(\sqrt{6} - 1)$ E) $3(\sqrt{6} + \sqrt{2})$

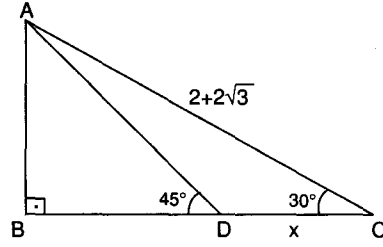
9)



Şekilde $[BA] \perp [AD]$,
 $m(\widehat{ABC}) = 30^\circ$, $m(\widehat{ADC}) = 45^\circ$,
 $|BC| = 6\sqrt{2}$ br ve $|AD| = 8\sqrt{2}$ br ise
 $|CD| = x$ kaç br dir?

- A) 10 B) 8 C) $5\sqrt{3}$ D) $5\sqrt{2}$ E) 5

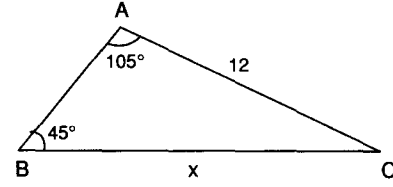
10)



Şekildeki ABC diküçgeninde
 $m(\widehat{ACB}) = 30^\circ$, $m(\widehat{ADB}) = 45^\circ$ ve
 $|AC| = 2 + 2\sqrt{3}$ br ise $|DC| = x$ kaç br dir?

- A) $\sqrt{3}$ B) $\sqrt{2}$ C) 1 D) 2 E) $3 - \sqrt{3}$

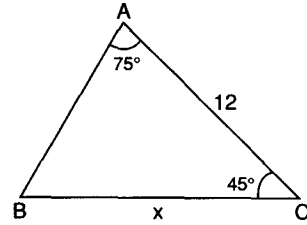
11)



Şekildeki ABC üçgeninde,
 $m(\widehat{BAC}) = 105^\circ$, $m(\widehat{ABC}) = 45^\circ$ ve
 $|AC| = 12$ br ise $|BC| = x$ kaç br dir?

- A) $3 + 3\sqrt{3}$ B) $6 + 6\sqrt{3}$ C) $6 + \sqrt{3}$
 D) $12\sqrt{5}$ E) $6 + \sqrt{3}$

12)



Şekildeki ABC üçgeninde
 $m(\widehat{BAC}) = 75^\circ$, $m(\widehat{ACB}) = 45^\circ$ ve
 $|AC| = 12$ br ise $|BC| = x$ kaç br dir?

- A) $2\sqrt{6} + 6\sqrt{2}$ B) $\sqrt{6} + 6\sqrt{2}$ C) $2\sqrt{2} + 6$
 D) $\sqrt{6} + 1$ E) $\sqrt{2} + 1$

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ÖZEL ÜÇGENLER

KONU
5

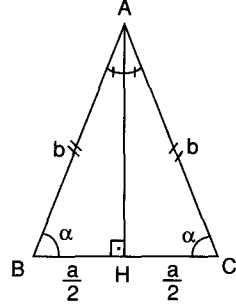
İKİZKENAR ÜÇGENİN ÖZELLİKLERİ

$$|AB| = |AC| = b$$

A: Tepe

[BC] : Taban

$$m(\widehat{B}) = m(\widehat{C}) = \alpha$$



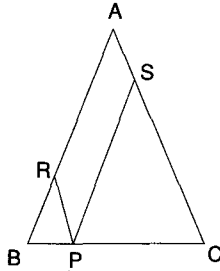
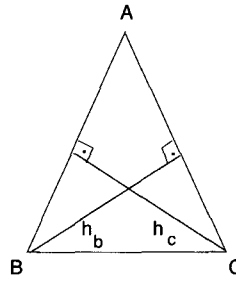
$$V_a = h_a = n_A$$

$$b = c \text{ ise}$$

$$n_B = n_C$$

$$h_b = h_c$$

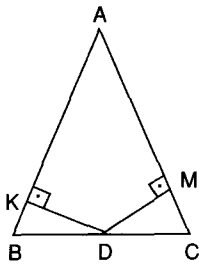
$$V_b = V_c$$



$$[PR] \parallel [AC]$$

$$[PS] \parallel [AB] \text{ ise}$$

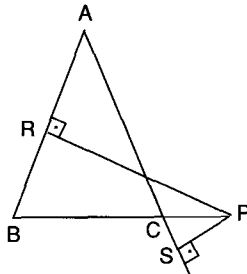
$$|PR| + |PS| = |AB| = |AC|$$



$$|AB| = |AC| \text{ ve}$$

$$D \in [BC] \text{ ise}$$

$$|DK| + |DM| = h_b = h_c$$

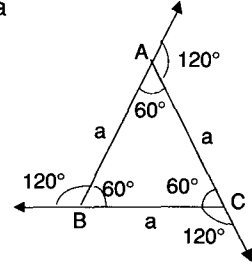


$$|AB| = |AC| \text{ ise}$$

$$|PR| - |PS| = h_b = h_c$$

EŞKENAR ÜÇGENİN ÖZELLİKLERİ

$$|AB| = |AC| = |BC| = a$$



$$m(\widehat{A}) = m(\widehat{B}) = m(\widehat{C}) = 60^\circ$$

$$m(\widehat{A}') = m(\widehat{B}') = m(\widehat{C}') = 120^\circ$$

$$\left. \begin{array}{l} h_a = h_b = h_c = x \\ V_a = V_b = V_c = x \\ n_A = n_B = n_C = x \end{array} \right\} \text{ ve } x = \frac{a\sqrt{3}}{2}$$

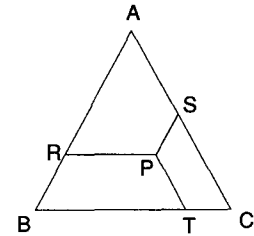
$$A(ABC) = \frac{a^2\sqrt{3}}{4}$$

$$[PR] \parallel [BC]$$

$$[PS] \parallel [AB]$$

$$[PT] \parallel [AC] \text{ ise}$$

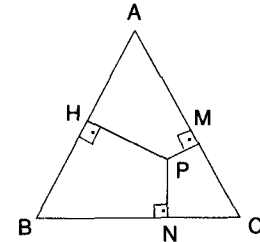
$$|PR| + |PS| + |PT| = a$$



$$[PH] \perp [AB]$$

$$[PM] \perp [AC]$$

$$[PN] \perp [BC] \text{ ise}$$

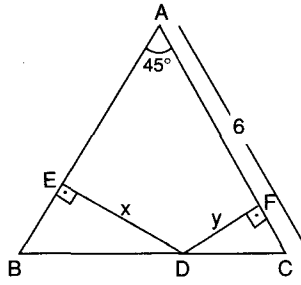


$$|PH| + |PM| + |PN| = h = \frac{a\sqrt{3}}{2} \text{ dir.}$$

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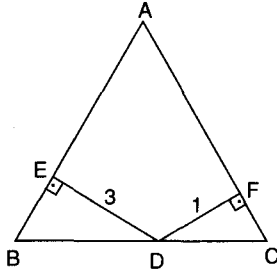
1)



Şekildeki ABC
üçgeninde
 $|AB| = |AC|$,
 $[DE] \perp [AB]$,
 $[DF] \perp [AC]$,
 $m(\widehat{BAC}) = 45^\circ$ ve
 $|AC| = 6$ br ise
 $x + y$ kaç br dir?

- A) 2 B) 3 C) $3\sqrt{2}$ D) 6 E) $6\sqrt{2}$

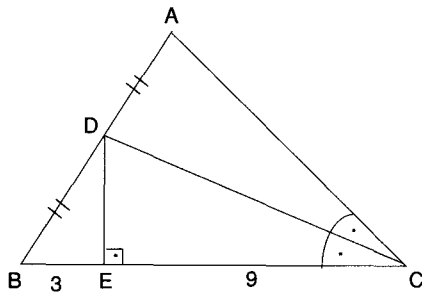
2)



Şekildeki ABC
üçgeninde
 $|AB| = |AC|$,
 $[DE] \perp [AB]$,
 $[DF] \perp [AC]$,
 $|DE| = 3$ br ,
 $|DF| = 1$ br ve
 $|BC| = 5$ br ise
 $|AC|$ kaç br dir?

- A) $\frac{17}{4}$ B) $\frac{21}{5}$ C) $\frac{25}{6}$
D) $\frac{27}{4}$ E) $\frac{35}{6}$

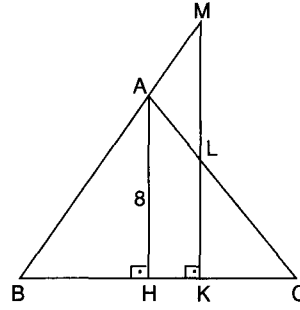
3)



Şekildeki ABC üçgeninde $[CD]$ açıortay
 $|AD| = |DB|$, $[DE] \perp [BC]$, $|BE| = 3$ br ve
 $|CE| = 9$ br ise $\angle(ABC)$ kaç br dir?

- A) 27 B) 28 C) 32 D) 36 E) 48

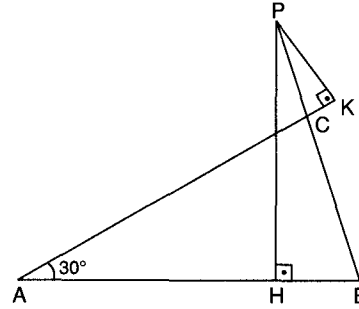
4)



Şekildeki ABC
üçgeninde
 $|AB| = |AC|$,
 $[AH] \perp [BC]$,
 $[MK] \perp [BC]$ ve
 $|AH| = 8$ br ise
 $|KL| + |KM|$ kaç
br dir?

- A) 9 B) 10 C) 12 D) 16 E) 18

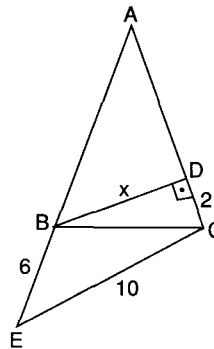
5)



Şekilde $m(\widehat{KAB}) = 30^\circ$,
 $[PH] \perp [AB]$, $[PK] \perp [AC]$,
 $|PK| = 3$ br ve $|PH| = 10$ br ise
 $|AB| = |AC|$ kaç br dir?

- A) 14 B) 13 C) 9 D) 8 E) 7

6)



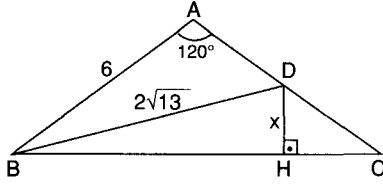
Şekildeki AEC üçge-
ninde $[BD] \perp [AC]$,
 $|AB| = |AC|$,
 $|BE| = 6$ br ,
 $|EC| = 10$ br ve
 $|DC| = 2$ br ise
 $|BD| = x$ kaç br dir?

- A) 8 B) $4\sqrt{3}$ C) 6 D) $4\sqrt{2}$ E) 5

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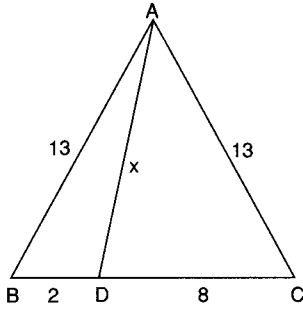
7)



Şekildeki ABC üçgeninde $m(\widehat{BAC}) = 120^\circ$,
 $|AB| = |AC| = 6$ br ve $|BD| = 2\sqrt{13}$ br ise
 $|DH| = x$ kaç br dir?

- A) 1 B) 1,2 C) 1,5 D) 2 E) 3

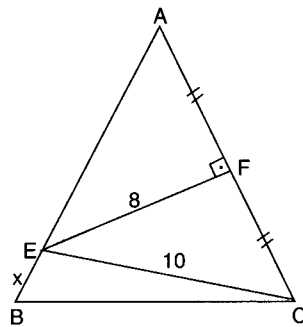
8)



Şekildeki ABC üçgeninde
 $|AB| = |AC| = 13$ br,
 $|DC| = 8$ br ve
 $|BD| = 2$ br ise
 $|AD| = x$ kaç
 br dir?

- A) 12 B) $3\sqrt{17}$ C) 15 D) $4\sqrt{17}$ E) 21

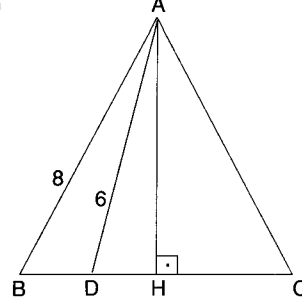
9)



Şekildeki ABC üçgeninde
 $|AB| = |AC|$,
 $|FA| = |FC|$,
 $|EF| \perp |AC|$,
 $|EF| = 8$ br ve
 $|EC| = 10$ br ise
 $|BE| = x$ kaç
 br dir?

- A) 1,8 B) 2 C) 2,4 D) 3 E) $3\sqrt{2}$

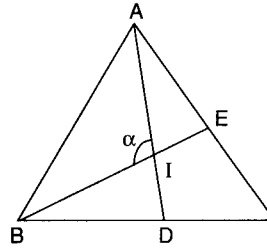
10)



Şekildeki ABC üçgeninde
 $|AB| = |AC|$,
 $|AH| \perp |BC|$,
 $|AB| = 8$ br ve
 $|AD| = 6$ br ise
 $|BD| \cdot |DC|$ kaçtır?

- A) 24 B) 28 C) 36 D) 44 E) 52

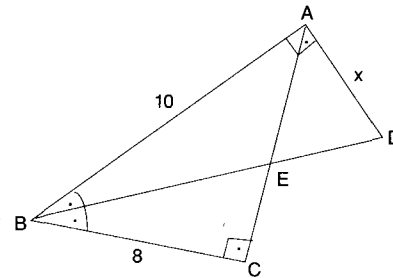
11)



Şekildeki ABC üçgeninde $|AB| = |AC|$,
 I noktası iç açıortayların kesim noktası ve
 $2|ID| = |IA|$ ise $m(\widehat{AIB}) = \alpha$ kaç derecedir?

- A) 100 B) 105 C) 120 D) 135 E) 150

12)



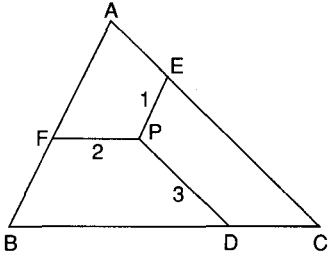
Şekilde ABC ve ABD diküçgen,
 $m(\widehat{ABD}) = m(\widehat{DBC})$,
 $|AB| = 10$ br ve $|BC| = 8$ br ise
 $|AD| = x$ kaç br dir?

- A) $\frac{12}{5}$ B) 3 C) $\frac{10}{3}$ D) 4 E) 5

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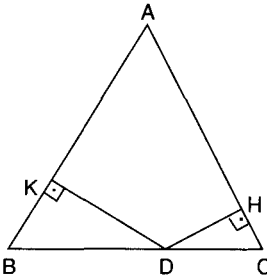
1)



Şekilde ABC eşkenar üçgen ,
[FP] // [BC] , [PE] // [AB] , [PD] // [AC],
|PF| = 2 br , |PE| = 1 br ve |PD| = 3 br ise
|BC| kaç br dir?

- A) 8 B) 7 C) 6 D) 5 E) 4

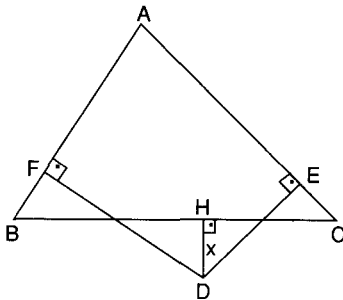
2)



Şekildeki ABC eşke-
nar üçgeninde
[DH] ⊥ [AC] ,
[DK] ⊥ [AB] ve
|DH| + |DK| = $6\sqrt{3}$ br
ise ABC üçgeninin
çevresi kaç br dir?

- A) $18\sqrt{3}$ B) 24 C) $24\sqrt{3}$ D) 36 E) 40

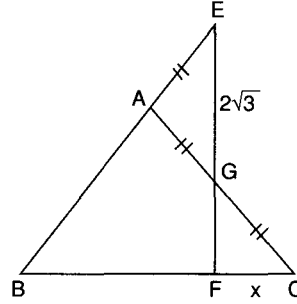
3)



Şekildeki ABC eşkenar üçgeninin yüksekliği
10 br dir.
|DF| = 7 br ve |DE| = 5 br ise
|DH| = x kaç br dir?

- A) 1 B) 2 C) 3 D) 4 E) 5

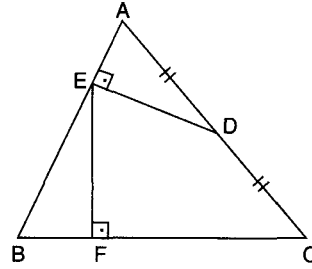
4)



Şekilde ABC eş-
kenar üçgendir.
|EA| = |AG| = |GC|
ve |EG| = $2\sqrt{3}$ br
ise |FC| = x
kaç br dir?

- A) 1 B) $\sqrt{2}$ C) 2 D) $\sqrt{3}$ E) 3

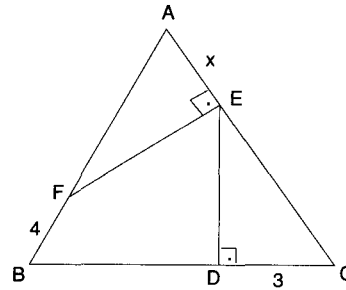
5)



Şekildeki ABC
eşkenar üçgenin-
de [DE] ⊥ [AB] ,
[EF] ⊥ [BC] ve
|AD| = |DC| ise
 $\frac{|ED|}{|EF|}$ kaçtır?

- A) $\frac{4}{3}$ B) $\frac{2}{3}$ C) $\frac{\sqrt{3}}{2}$ D) $\frac{\sqrt{3}}{3}$ E) $\frac{\sqrt{3}}{4}$

6)



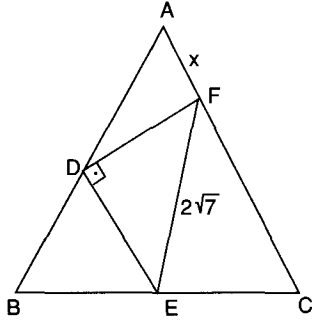
Şekildeki ABC eşkenar üçgeninde
[FE] ⊥ [AC] , [ED] ⊥ [BC]
|BF| = 4 br , |DC| = 3 br ise
|AE| = x kaç br dir?

- A) 5 B) 4 C) 3 D) 2 E) 1

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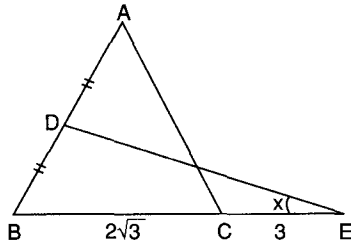
7)



- A) 5 B) 4 C) 3 D) 2 E) 1

Şekilde ABC eşkenar üçgen, D ve E kenarların orta noktaları, $[ED] \perp [DF]$ ve $|EF| = 2\sqrt{7}$ br ise $|AF| = x$ kaç br dir?

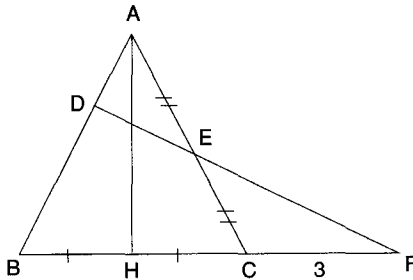
8)



Şekilde ABC eşkenar üçgen, $|BD| = |DA|$, $|BC| = 2\sqrt{3}$ br ve $|CE| = 3$ br ise $m(\widehat{DEB}) = x$ kaç derecedir?

- A) 10 B) 15 C) 20 D) 30 E) 45

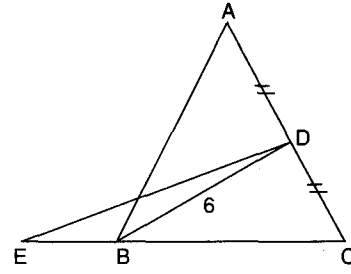
9)



Şekilde ABC eşkenar üçgen, $|BH| = |HC|$, $|AE| = |EC|$, $|AH| = |EF|$ ve $|FC| = 3$ br ise $|AB|$ kaç br dir?

- A) 4 B) 5 C) 6 D) 7 E) 8

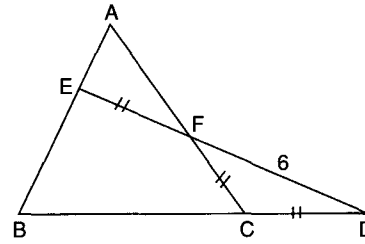
10)



Şekilde ABC eşkenar üçgen $|AD| = |DC|$, $|BD| = 6$ br, $m(\widehat{DBC}) = 2m(\widehat{DEB})$ ise $|EC|$ kaç br dir?

- A) $6 + 6\sqrt{3}$ B) $6 + 4\sqrt{3}$ C) $3 + 4\sqrt{3}$
D) $6 + 2\sqrt{3}$ E) $6 + \sqrt{3}$

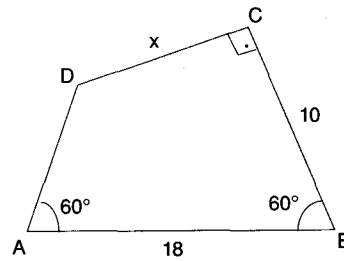
11)



Şekilde ABC eşkenar üçgen, $|EF| = |FC| = |CD|$ ve $|FD| = 6$ br ise $|AF|$ kaç br dir?

- A) 2 B) 3 C) 4 D) 5 E) 6

12)



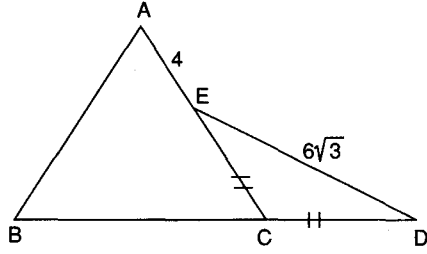
Şekildeki ABCD dörtgeninde $m(\widehat{DAB}) = m(\widehat{CBA}) = 60^\circ$, $[DC] \perp [BC]$, $|AB| = 18$ br ve $|BC| = 10$ br ise $|DC| = x$ kaç br dir?

- A) 16 B) $8\sqrt{3}$ C) $4\sqrt{3}$ D) 2 E) $\sqrt{3}$

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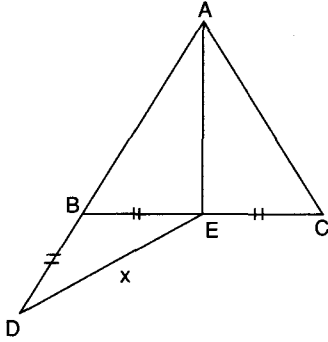
1)



Şekildeki ABC eşkenar üçgeninde ,
|CE| = |CD| , |ED| = $6\sqrt{3}$ br ve
|AE| = 4 br ise $\angle(ABC)$ kaç br dir?

- A) 21 B) 30 C) 32 D) 36 E) 40

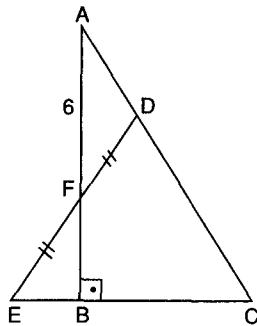
2)



Şekildeki ABC eşkenar üçgeninde
|AD| = 12 br ve |DB| = |BE| = |EC| ise
|DE| = x kaç br dir?

- A) $2\sqrt{2}$ B) 3 C) $4\sqrt{3}$ D) 5 E) $6\sqrt{3}$

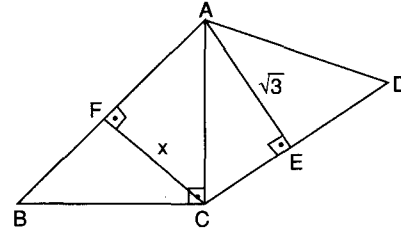
3)



Şekilde ABC diküçgen, DEC eşkenar üçgen,
|EF| = |FD| ve
|AF| = 6 br ise
|EC| kaç br dir?

- A) $8\sqrt{3}$ B) 8 C) 6 D) $4\sqrt{3}$ E) $3\sqrt{3}$

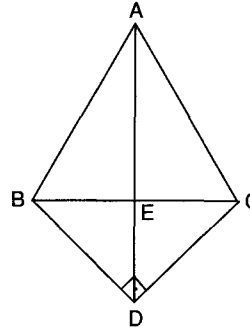
4)



Şekilde ABC ikizkenar diküçgen,
ACD eşkenar üçgen ,
[CF] $\perp$ [AB] , [AE] $\perp$ [CD] ve
|AE| = $\sqrt{3}$ br ise |CF| = x kaç br dir?

- A) $\sqrt{2}$ B) $2\sqrt{2}$ C) $2\sqrt{3}$ D) 3 E) $3\sqrt{3}$

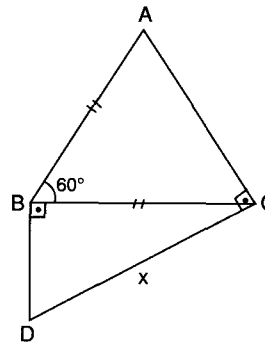
5)



Şekilde ABC eşkenar üçgen, BDC ikizkenar diküçgen ve
[AD] $\cap$ [BC] = {E} ise
 $\frac{|AE|}{|EC|}$ kaçtır?

- A) $3\sqrt{3}$ B) 3 C) $2\sqrt{3}$ D) 2 E) $\sqrt{3}$

6)



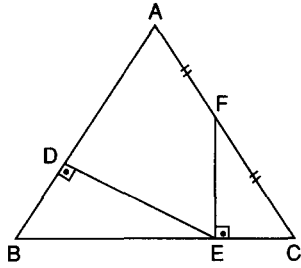
Şekilde |AB| = |BC| ,
 $m(\widehat{ABC}) = 60^\circ$,
[AC] $\perp$ [CD] ,
[BD] $\perp$ [BC] ve
 $\angle(ABC) = 27$ br ise
|DC| = x kaç br dir?

- A) 12 B) $6\sqrt{3}$ C) 9 E) 6 E) $3\sqrt{3}$

7) Alanı çevresinin iki katına eşit olan eşkenar üçgenin yüksekliği kaç br dir?

- A) 6 B) 8 C) 10 D) 12 E) 14

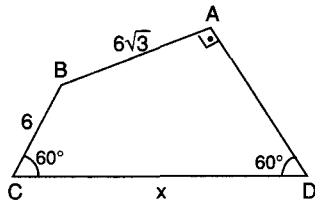
8)



Şekilde ABC eşkenar üçgen ,
[EF] $\perp$ [BC] , [ED] $\perp$ [AB] ve
|AF| = |FC| ise $\frac{|EF|}{|ED|}$ kaçtır?

- A) $\frac{3}{2}$ B) 1 C) $\frac{2}{3}$ D) $\frac{3}{5}$ E) $\frac{1}{2}$

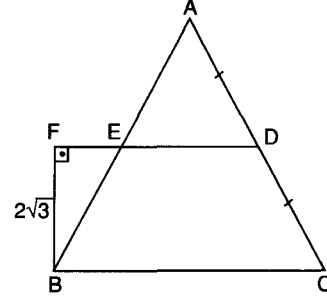
9)



Şekilde [BA] $\perp$ [AD] ,
 $m(\widehat{BCD}) = m(\widehat{ADC}) = 60^\circ$,
|CB| = 6 br ve |BA| = $6\sqrt{3}$ br ise
|CD| = x kaç br dir?

- A) 18 B) $12\sqrt{3}$ C) 16 D) 12 E) 8

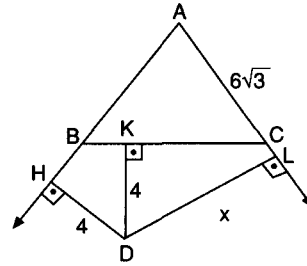
10)



Şekilde ABC eşkenar üçgen ,
[FD] $\parallel$ [BC] , [BF] $\perp$ [FD] ,
|FB| = $2\sqrt{3}$ br ve |AD| = |DC| ise
Ç(ABC) kaç br dir?

- A) 36 B) 32 C) 28 D) 26 E) 24

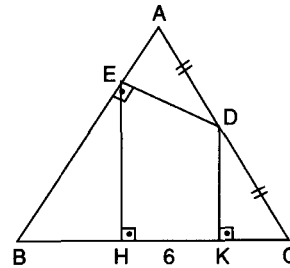
11)



Şekilde ABC eşkenar üçgen ,
[DH] $\perp$ [AH] , [DL] $\perp$ [AL] , [DK] $\perp$ [BC] ve
|AC| = $6\sqrt{3}$ br ve |DH| = |DK| = 4 br ise
|DL| = x kaç br dir?

- A) 10 B) 9 C) 8 D) $4\sqrt{3}$ E) $2\sqrt{3}$

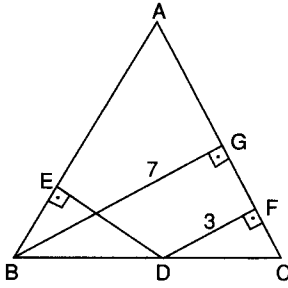
12)



Şekilde ABC eşke-
nar üçgen
[DE] $\perp$ [AB] ,
[DK] $\perp$ [BC] ,
[EH] $\perp$ [BC] ,
|AD| = |DC| ve
|HK| = 6 br ise
Ç(ABC) kaç br dir?

- A) 60 B) 54 C) 48 D) 36 E) 27

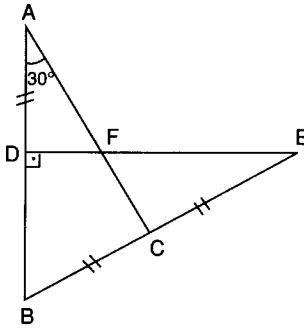
1)



Şekildeki ABC ikizkenar üçgeninde, $|AB| = |AC|$, $[BG] \perp [AC]$, $[DF] \perp [AC]$, $[DE] \perp [AB]$, $|DF| = 3$ br ve $|BG| = 7$ br ise $|ED|$ kaç br dir?

- A) 3 B) 4 C) 7 D) 9 E) 10

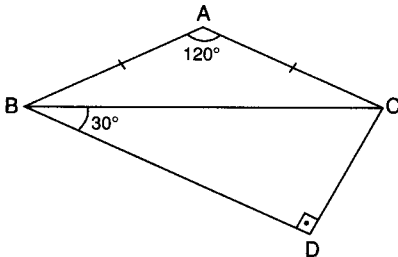
2)



Şekilde $[AB] \perp [DE]$, $|BC| = |CE| = |AD|$, $m(\widehat{BAC}) = 30^\circ$ ve $|DE| = 6$ br ise $|AC|$ kaç br dir?

- A) 3 B) $2\sqrt{3}$ C) $3\sqrt{3}$ D) 6 E) $4\sqrt{3}$

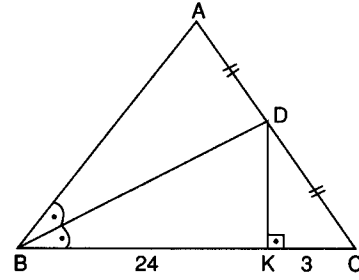
3)



Şekilde, $|AB| = |AC|$, $m(\widehat{CBD}) = 30^\circ$, $m(\widehat{BAC}) = 120^\circ$ ve $[BD] \perp [CD]$ ise $\frac{|AB|}{|BD|}$ kaçtır?

- A) $\frac{\sqrt{3}}{2}$ B) $\frac{2}{3}$ C) 1 D) $\frac{4}{3}$ E) $\frac{8}{5}$

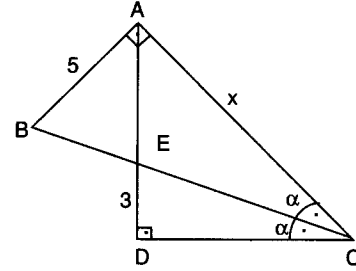
4)



Şekildeki ABC üçgeninde $[BD]$ açıortay, $|AD| = |DC|$, $[DK] \perp [BC]$, $|BK| = 24$ br ve $|KC| = 3$ br ise ABC üçgeninin çevresi kaç br dir?

- A) 54 B) 68 C) 72 D) 81 E) 96

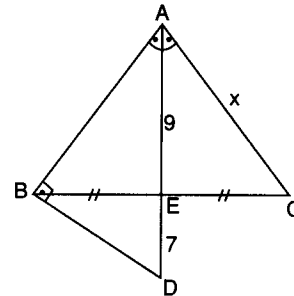
5)



Şekilde $[AB] \perp [AC]$, $[AD] \perp [BC]$, $m(\widehat{ACB}) = m(\widehat{BCD})$, $|AB| = 5$ br ve $|DE| = 3$ br ise $|AC| = x$ kaç br dir?

- A) 7 B) 8 C) 10 D) 15 E) 17

6)



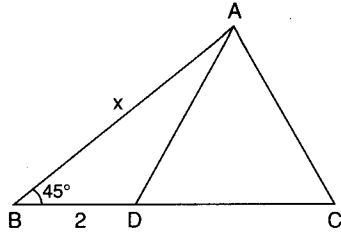
Şekilde $[AD]$ açıortay, $[AB] \perp [BD]$, $|BE| = |EC|$, $|AE| = 9$ br, $|ED| = 7$ br ise $|AC| = x$ kaç br dir?

- A) $3\sqrt{7}$ B) $4\sqrt{7}$ C) 12 D) 14 E) $7\sqrt{5}$

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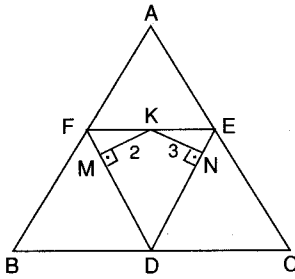
7)



Şekilde ACD eşkenar üçgen , $m(\widehat{ABC}) = 45^\circ$ ve $|BD| = 2$ br ise $|AB| = x$ kaç br dir?

- A) $\sqrt{3} + 2$ B) $2 + \sqrt{3}$ C) $2(\sqrt{3} + 2)$
D) $\sqrt{6} + 3\sqrt{2}$ E) $\sqrt{6} + \sqrt{2}$

8)



Şekildeki ABC eşkenar üçgeninde D, E, F orta noktalardır.

$[KM] \perp [FD]$,

$[KN] \perp [DE]$,

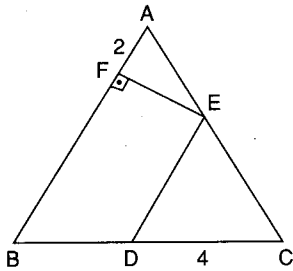
$|KM| = 2$ br ve

$|KN| = 3$ br ise

$|AC|$ kaç br dir?

- A) $\frac{10\sqrt{3}}{3}$ B) $\frac{20\sqrt{3}}{3}$ C) $8\sqrt{3}$
D) $\frac{28\sqrt{3}}{3}$ E) $10\sqrt{3}$

9)



Şekildeki ABC eşkenar üçgeninde

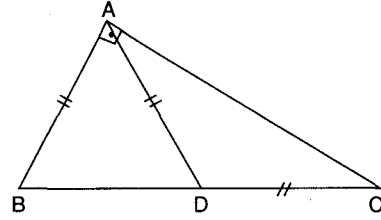
$[ED] \parallel [AB]$, $[EF] \perp [AB]$,

$|DC| = 4$ br ve $|AF| = 2$ br ise

ABC üçgeninin yüksekliği kaç br dir?

- A) $2\sqrt{3}$ B) $4\sqrt{3}$ C) $6\sqrt{3}$ D) $8\sqrt{3}$ E) $16\sqrt{3}$

10)

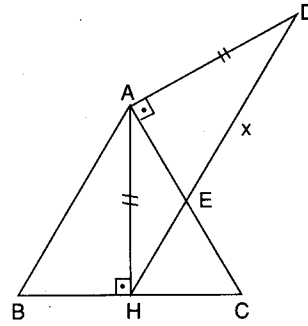


Şekildeki ABC diküçgeninde ,

$|AB| = |AD| = |DC|$ ise $\frac{|AC|}{|BD|}$ kaçtır?

- A) $\sqrt{2}$ B) $\sqrt{3}$ C) 2 D) $2\sqrt{2}$ E) $2\sqrt{3}$

11)



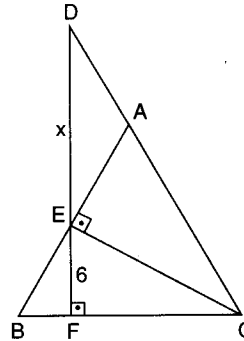
Şekilde ABC eşkenar üçgen , $[AH] \perp [BC]$,

$[AC] \perp [AD]$, $|AH| = |AD|$ ve $|AB| = 12$ br ise

$|ED| = x$ kaç br dir?

- A) 8 B) 9 C) 10 D) 12 E) 15

12)



Şekilde ABC eşkenar üçgen ,

$[CE] \perp [AB]$,

$[DF] \perp [BC]$ ve

$|EF| = 6$ br ise

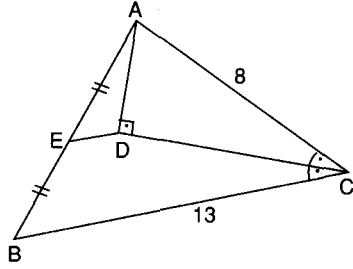
$|DE| = x$ kaç br dir?

- A) $3\sqrt{3}$ B) 8 C) $6\sqrt{3}$ D) 12 E) $12\sqrt{3}$

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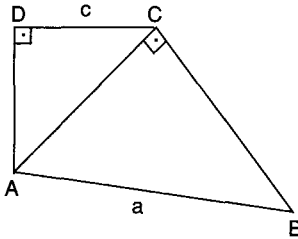
1)



Şekilde $[DC]$ açıortay, $[AD] \perp [DC]$,
 $|AC| = 8$ br, $|BC| = 13$ br ve
 $|AE| = |EB|$ ise $|ED|$ kaç br dir?

- A) 3,5 B) 3 C) 2,5 D) 2 E) 1,5

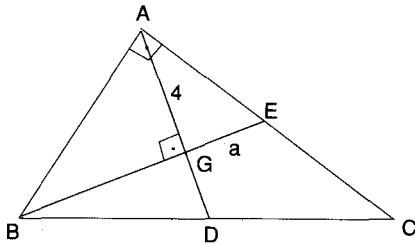
2)



Şekilde $\triangle ACB$ ve $\triangle ADC$ ikizkenar diküçgendir.
 $|AB| = a$ br,
 $|DC| = c$ br ve
 $a + c = 15$ br ise
 $|AB| = a$ kaç
br dir?

- A) 7 B) 8 C) 9 D) 10 E) 12

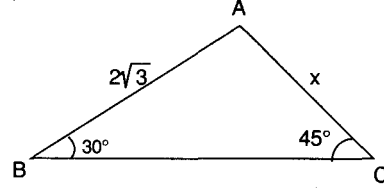
3)



Şekildeki $\triangle ABC$ diküçgeninde G noktası ağırlık
merkezi, $[BE] \perp [AD]$ ve $|AG| = 4$ br ise
 $|GE| = a$ kaç br dir?

- A) 3 B) $2\sqrt{2}$ C) 2 D) $\sqrt{3}$ E) $\sqrt{2}$

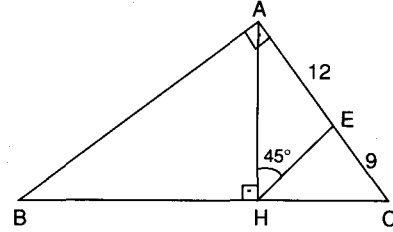
4)



Şekildeki $\triangle ABC$ üçgeninde,
 $m(\widehat{ABC}) = 30^\circ$, $m(\widehat{ACB}) = 45^\circ$ ve
 $|AB| = 2\sqrt{3}$ br ise $|AC| = x$ kaç br dir?

- A) $\sqrt{2}$ B) $\sqrt{3}$ C) $\sqrt{5}$ D) $\sqrt{6}$ E) $\sqrt{7}$

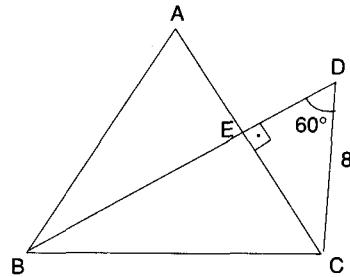
5)



Şekildeki $\triangle ABC$ diküçgeninde $[AH] \perp [BC]$,
 $m(\widehat{AHE}) = 45^\circ$, $|AE| = 12$ br ve $|EC| = 9$ br ise
 $|BC|$ kaç br dir?

- A) 25 B) 30 C) 35 D) 40 E) 45

6)



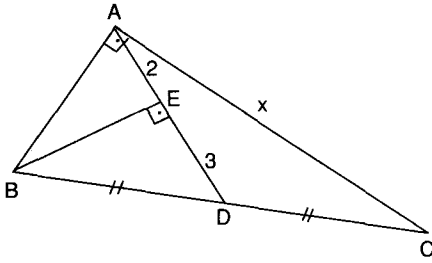
Şekilde $\triangle ABC$ eşkenar üçgen
 $[BD] \perp [AC]$, $m(\widehat{BDC}) = 60^\circ$ ve
 $|DC| = 8$ br ise $|BD|$ kaç br dir?

- A) 4 B) 8 C) 12 D) 16 E) 20

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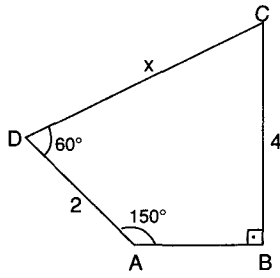
7)



Şekildeki ABC diküçgeninde $[BE] \perp [AD]$,
 $|BD| = |DC|$, $|AE| = 2$ br ve $|ED| = 3$ br ise
 $|AC| = x$ kaç br dir?

- A) 4 B) 5 C) $4\sqrt{3}$ D) $4\sqrt{5}$ E) $5\sqrt{3}$

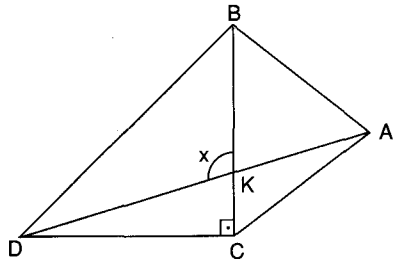
8)



Şekilde,
 $m(\widehat{CDA}) = 60^\circ$,
 $m(\widehat{DAB}) = 150^\circ$,
 $[AB] \perp [BC]$,
 $|AD| = 2$ br ve
 $|BC| = 4$ br ise
 $|DC| = x$ kaç
 br dir?

- A) 5 B) 6 C) 7 D) 8 E) 10

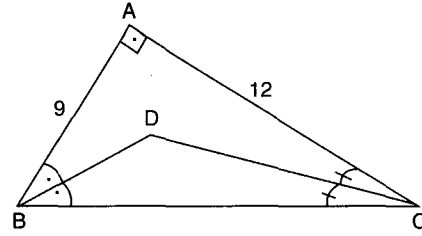
9)



Şekilde ABC eşkenar üçgen,
 $[BC] \perp [CK]$ ve $|BC| = |CK|$ ise
 $m(\widehat{BKD}) = x$ kaç derecedir?

- A) 100 B) 105 C) 110 D) 115 E) 120

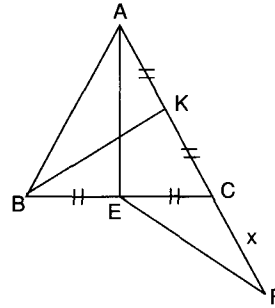
10)



Şekildeki ABC diküçgeninde,
 $|AB| = 9$ br, $|AC| = 12$ br
 $[BD]$ ve $[DC]$ açıortay ise
 D noktasının $[BC]$ ye uzaklığı kaç br dir?

- A) 1 B) 1,5 C) 2 D) 2,4 E) 3

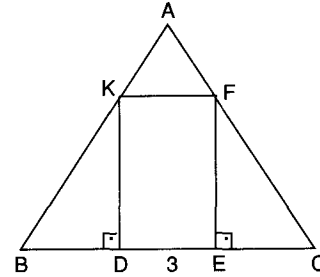
11)



Şekilde ABC
 eşkenar üçgen
 $|AK| = |KC|$,
 $|BE| = |EC|$,
 $|EF| = |BK|$ ve
 $|AB| = 8$ br ise
 $|CF| = x$ kaç
 br dir?

- A) 2 B) 3 C) 4 D) 4,5 E) 5

12)



Şekilde ABC eşkenar üçgen,
 DEFK dikdörtgen, $|DE| = 3$ br ve
 $A(DEFK) = 6\sqrt{3}$ br² ise

$A(ABC)$ kaç br² dir?

- A) $12\sqrt{3}$ B) $\frac{49\sqrt{3}}{4}$ C) $20\sqrt{3}$
 D) $24\sqrt{3}$ E) $\frac{81\sqrt{3}}{4}$

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**PARALEL DOĞRULARIN AYIRDIĞI ORANTILI
DOĞRU PARÇALARI**

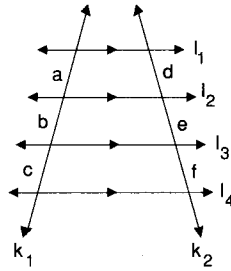
Paralel doğrular kesenler üzerinde karşılıklı orantılı parçalar ayırırlar.

$$l_1 \parallel l_2 \parallel l_3 \parallel l_4 \text{ ise}$$

$$\frac{a}{d} = \frac{b}{e} = \frac{c}{f}$$

$$\frac{a}{a+b} = \frac{d}{d+e}$$

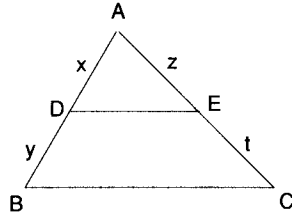
$$\frac{b}{a+b+c} = \frac{e}{d+e+f} \text{ dir.}$$



$$[DE] \parallel [BC] \text{ ise}$$

$$\frac{x}{y} = \frac{z}{t}$$

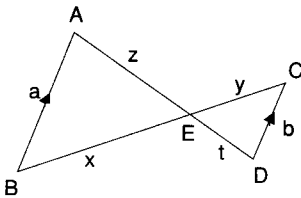
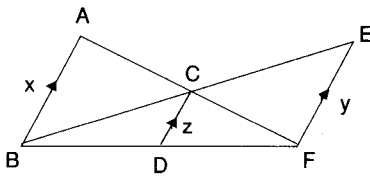
$$\frac{x}{x+y} = \frac{z}{z+t} = \frac{|DE|}{|BC|}$$



Bir üçgende kenarlardan birine paralel olan doğru iki kenar üzerinde karşılıklı orantılı parçalar ayırır.

$$[AB] \parallel [CD] \parallel [EF] \text{ ise}$$

$$\frac{1}{x} + \frac{1}{y} = \frac{1}{z}$$



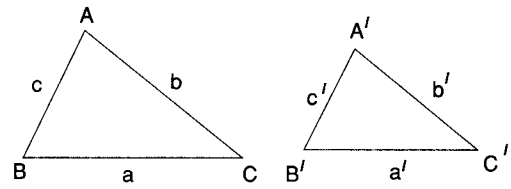
$$[AB] \parallel [CD] \text{ ise } \frac{a}{b} = \frac{x}{y} = \frac{z}{t}$$

BENZER ÜÇGENLER

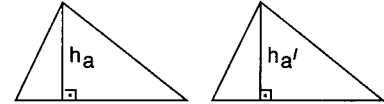
Benzerlik Teoremleri

- I. (A.A.A): İkişer açısı eş olan iki üçgen benzerdir.
- II. (K.A.K): İkişer kenarının uzunlukları orantılı ve bu iki kenar arasındaki açılarının ölçüsü eş olan iki üçgen benzerdir.
- III. (K.K.K): Üç kenarının uzunlukları orantılı olan iki üçgen benzerdir.

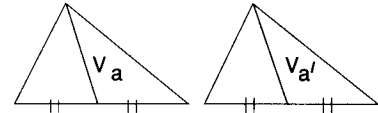
$$\triangle ABC \sim \triangle A'B'C'$$



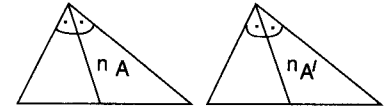
$$\frac{h_a}{h_{a'}} = k$$



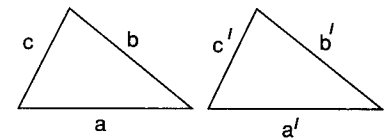
$$\frac{V_a}{V_{a'}} = k$$



$$\frac{n_A}{n_{A'}} = k$$



$$\frac{P}{P'} = k$$



$$P = a + b + c, \quad P' = a' + b' + c'$$

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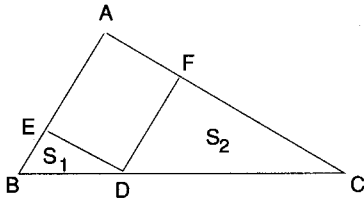
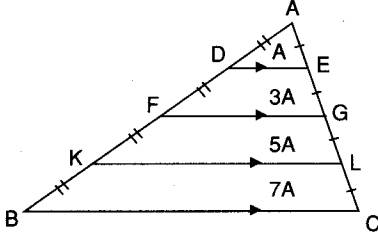
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ÜÇGENDE BENZERLİK

$$\frac{A(ABC)}{A(A'BC')} = \left(\frac{a}{a'}\right)^2 = k^2$$

Benzer iki üçgenin alanları oranı benzerlik oranının karesine eşittir.

ABC üçgeninde $|AD| = |DF| = |FK| = |KB|$ ve $|AE| = |EG| = |GL| = |LC|$ ise



$D \in [BC]$, $[DE] \parallel [AC]$ ve

$[FD] \parallel [AB]$ ise

$$\sqrt{A(ABC)} = \sqrt{S_1} + \sqrt{S_2} \text{ dir.}$$

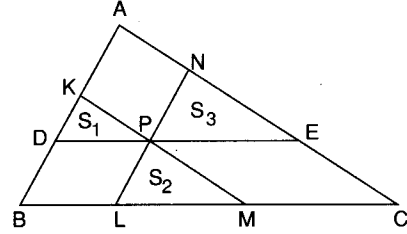
P noktası üçgenin içinde bir nokta,

$[DE] \parallel [BC]$,

$[KM] \parallel [AC]$ ve

$[NL] \parallel [AB]$ ise

$$\sqrt{A(ABC)} = \sqrt{S_1} + \sqrt{S_2} + \sqrt{S_3} \text{ dür.}$$

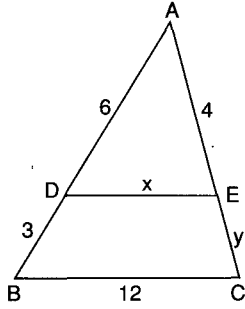


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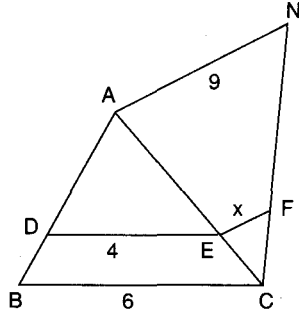
1)



Şekildeki ABC
üçgeninde
[DE] // [BC]
|AD| = 6 br ,
|DB| = 3 br ,
|BC| = 12 br ve
|AE| = 4 br ise
x + y kaç br dir?

- A) 8 B) 9 C) 10 D) 12 E) 15

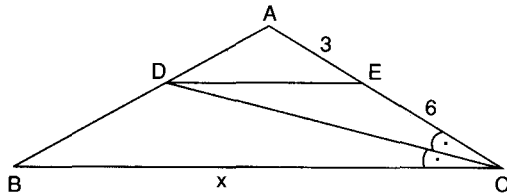
2)



Şekilde [DE] // [BC] , [EF] // [AN]
|AN| = 9 br , |DE| = 4 br ve |BC| = 6 br ise
|EF| = x kaç br dir?

- A) 4,5 B) 4 C) 3 D) 2,5 E) 2

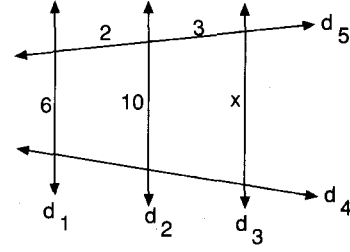
3)



Şekilde [DE] // [BC] , [CD] açıortay ,
|AE| = 3 br ve |EC| = 6 br ise
|BC| = x kaç br dir?

- A) 20 B) 18 C) 16 D) 14 E) 12

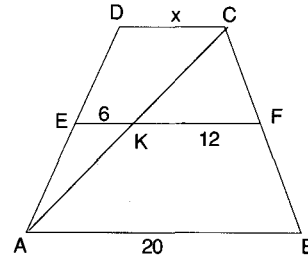
4)



Şekilde $d_1 \parallel d_2 \parallel d_3$ ise
verilen ölçülere göre x kaç br dir?

- A) 14 B) 15 C) 16 D) 18 E) 19

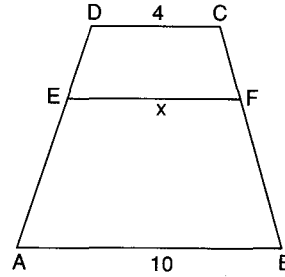
5)



Şekilde [DC] // [EF] // [AB]
|EK| = 6 br , |KF| = 12 br ve
|AB| = 20 br ise |DC| = x kaç br dir?

- A) 9 B) 12 C) 15 D) 16 E) 18

6)



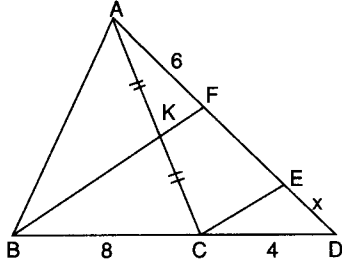
Şekilde [DC] // [EF] // [AB],
2|DE| = |AE| , |DC| = 4 br ve
|AB| = 10 br ise |EF| = x kaç br dir?

- A) 4 B) 5 C) 6 D) 7 E) 8

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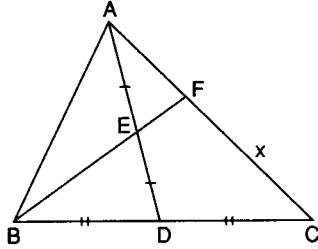
7)



Şekilde $[FB] \parallel [CE]$, $|AK| = |KC|$
 $|AF| = 6$ br, $|BC| = 8$ br ve $|CD| = 4$ br ise
 $|ED| = x$ kaç br dir?

- A) 2 B) $\frac{5}{2}$ C) 3 D) $\frac{7}{2}$ E) 2

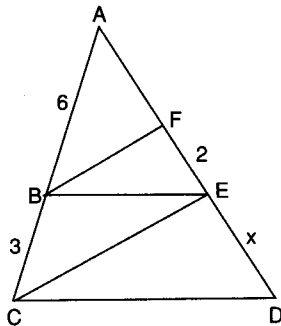
8)



Şekildeki ABC üçgeninde
 $|BD| = |DC|$, $|AE| = |ED|$ ve
 $|AC| = 12$ br ise $|FC| = x$ kaç br dir?

- A) 3 B) 4 C) 6 D) 8 E) 9

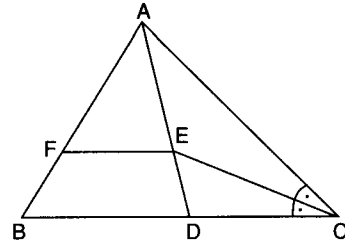
9)



Şekilde $[BF] \parallel [CE]$, $[BE] \parallel [CD]$
 $|AB| = 6$ br, $|BC| = 3$ br ve $|FE| = 2$ br ise
 $|DE| = x$ kaç br dir?

- A) 1 B) 2 C) 3 D) 4 E) 5

10)



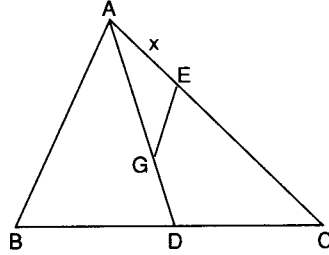
Şekildeki ABC üçgeninde uzunluklar birer tam-
 sayı, $[CE]$ açıortay,

$[EF] \parallel [BC]$ ve $\frac{|AC|}{|DC|} = \frac{3}{2}$ ise

$|EF| + |BD|$ kaç br olabilir?

- A) 11 B) 12 C) 14 D) 16 E) 18

11)

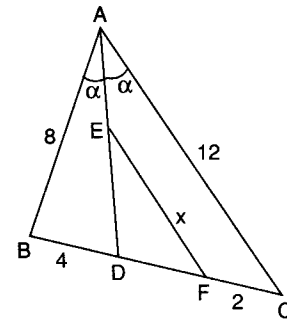


Şekildeki ABC üçgeninde G noktası ağırlık
 merkezidir.

$[GE] \parallel [AB]$ ve $|AC| = 12$ br ise
 $|AE| = x$ kaç br dir?

- A) 2 B) 3 C) 4 D) 6 E) 8

12)



Şekildeki ABC üçgeninde $[AD]$ açıortay,
 $[EF] \parallel [AC]$, $|AB| = 8$ br, $|AC| = 12$ br ve
 $|FC| = 2$ br ise $|EF| = x$ kaç br dir?

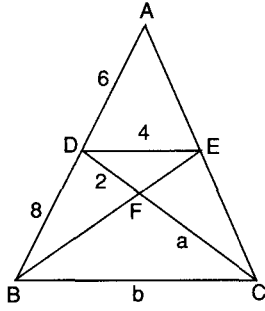
- A) 4 B) 5 C) 6 D) 7 E) 8

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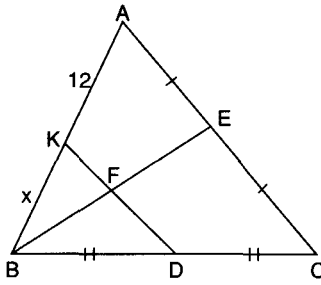
1)



Şekildeki ABC
üçgeninde
[DE] // [BC] ,
|AD| = 6 br ,
|BD| = 8 br ,
|DE| = 4 br ,
|DF| = 2 br
|FC| = a br ve
|BC| = b br ise
a + b kaç br dir?

- A) 10 B) 11 C) 12 D) 13 E) 14

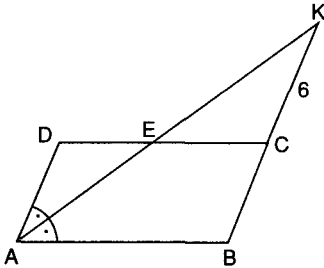
2)



Şekildeki ABC
üçgeninde,
|AE| = |EC|,
|BD| = |DC|,
 $\frac{|BF|}{|FE|} = \frac{2}{3}$ ve
|AK| = 12 br ise
|BK| = x kaç
br dir?

- A) 3 B) 5 C) 6 D) 8 E) 9

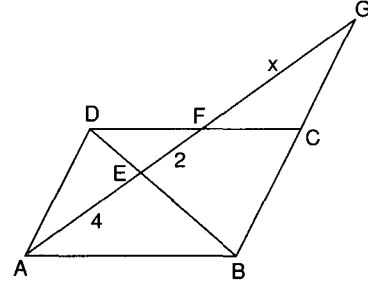
3)



Şekilde [AK] açıortay ,
|CK| = 6 br ve $2|EC| = 3|DE|$ ise
ABCD paralelkenarının çevresi kaç br dir?

- A) 14 B) 18 C) 24 D) 28 E) 32

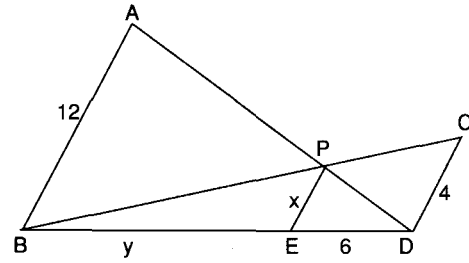
4)



Şekilde ABCD paralelkenar
|AE| = 4 br ve |EF| = 2 br ise
|FG| = x kaç br dir?

- A) 8 B) 7 C) 6 D) 5 E) 4

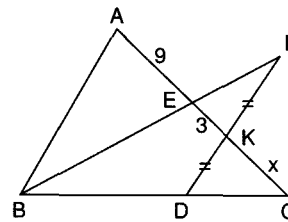
5)



Şekilde [AB] // [PE] // [CD] , |AB| = 12 br ,
|DC| = 4 br , |ED| = 6 br , |PE| = x br ve
|BE| = y br ise $\frac{y}{x}$ kaçtır?

- A) 2 B) 3 C) 4 D) 5 E) 6

6)



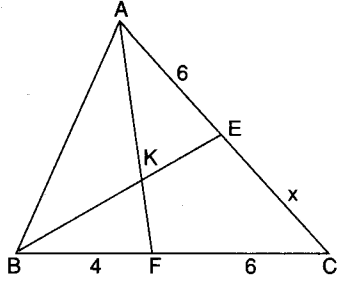
Şekilde [AB] // [FD] , |KF| = |KD| ,
|AE| = 9 br ve |EK| = 3 br ise
|KC| = x kaç br dir?

- A) 5 B) 6 C) 7 D) 8 E) 9

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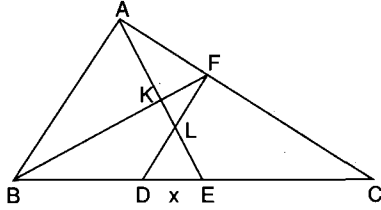
7)



Şekilde $|AE| = 6$ br , $|BF| = 4$ br ,
 $|FC| = 6$ br ve $\frac{|AK|}{|KF|} = \frac{3}{2}$ ise
 $|EC| = x$ kaç br dir?

- A) 12 B) 10 C) 9 D) 8 E) 6

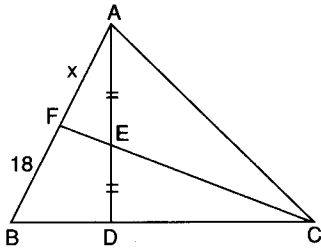
8)



Şekilde $|DF| \parallel |AB|$, $|AC| = 3|AF|$,
 $|BF| = 3|KF|$ ve $|BC| = 24$ br ise
 $|DE| = x$ kaç br dir?

- A) $\frac{6}{5}$ B) $\frac{8}{5}$ C) $\frac{9}{5}$
 D) $\frac{21}{10}$ E) $\frac{12}{5}$

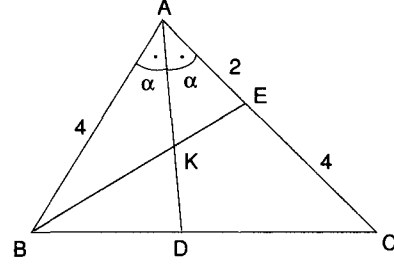
9)



Şekilde $|AE| = |ED|$,
 $|BC| = 3|BD|$ ve $|FB| = 18$ br ise
 $|AF| = x$ kaç br dir?

- A) 10 B) 12 C) 13 D) 14 E) 16

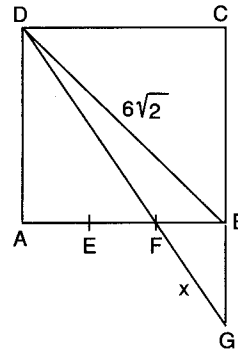
10)



Şekilde $|AD|$ açıortay,
 $|AB| = |EC| = 4$ br ve $|AE| = 2$ br ise
 $\frac{|AK|}{|KD|}$ kaçtır?

- A) $\frac{5}{2}$ B) $\frac{5}{3}$ C) $\frac{5}{4}$ D) $\frac{5}{7}$ E) $\frac{5}{9}$

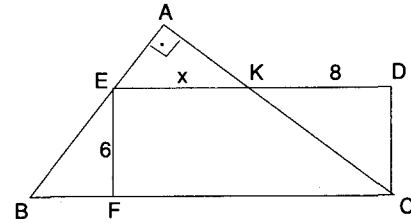
11)



Şekilde ABCD kare ,
 $|DB| = 6\sqrt{2}$ br ,
 $|AE| = |EF| = |FB|$ ise
 $|FG| = x$ kaç br dir?

- A) $2\sqrt{13}$ B) $\sqrt{13}$
 C) $4\sqrt{2}$ D) $3\sqrt{3}$
 E) $3\sqrt{2}$

12)



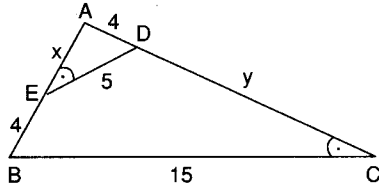
Şekilde $m(\hat{A}) = 90^\circ$, FCDE dikdörtgen ,
 $|EF| = 6$ br , $|KD| = 8$ br ve $|EB| = 2|AE|$ ise
 $|EK| = x$ kaç br dir?

- A) $\frac{25}{12}$ B) $\frac{25}{9}$ C) $\frac{25}{8}$
 D) $\frac{25}{6}$ E) $\frac{25}{4}$

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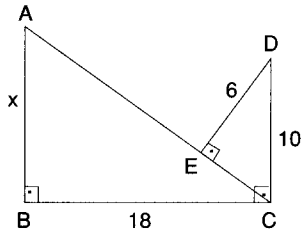
1)



Şekilde $m(\widehat{AED}) = m(\widehat{ACB})$,
 $|AD| = |BE| = 4$ br, $|ED| = 5$ br ve
 $|BC| = 15$ br ise
 $|AE| + |DC| = x + y$ kaç br dir?

- A) 32 B) 30 C) 28 D) 26 E) 24

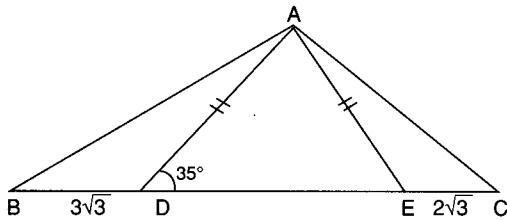
2)



Şekilde $[AB] \perp [BC]$, $[DC] \perp [BC]$
 $[DE] \perp [AC]$, $|DE| = 6$ br, $|DC| = 10$ br ve
 $|BC| = 18$ br ise $|AB| = x$ kaç br dir?

- A) 12 B) 14 C) 24 D) 26 E) 28

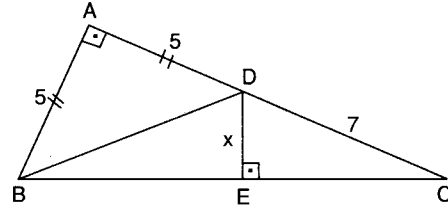
3)



Şekilde, $m(\widehat{ADE}) = 35^\circ$, $m(\widehat{BAC}) = 145^\circ$,
 $|AD| = |AE|$, $|BD| = 3\sqrt{3}$ br ve
 $|EC| = 2\sqrt{3}$ br ise $|AD|$ kaç br dir?

- A) $\sqrt{2}$ B) $2\sqrt{2}$ C) $3\sqrt{2}$ D) $4\sqrt{2}$ E) $5\sqrt{2}$

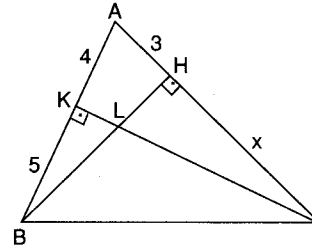
4)



Şekildeki ABC diküçgeninde $[DE] \perp [BC]$,
 $|AB| = |AD| = 5$ br ve
 $|DC| = 7$ br ise $|DE| = x$ kaç br dir?

- A) $\frac{1}{2}$ B) $\frac{35}{13}$ C) $\frac{5}{2}$ D) $\frac{34}{13}$ E) $\frac{13}{35}$

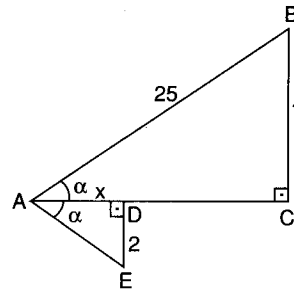
5)



ABC üçgeninde,
 $[BH] \perp [AC]$,
 $[CK] \perp [AB]$
 $|AK| = 4$ br,
 $|BK| = 5$ br ve
 $|AH| = 3$ br ise
 $|HC| = x$ kaç
 br dir?

- A) 4 B) 5 C) 6 D) 8 E) 9

6)



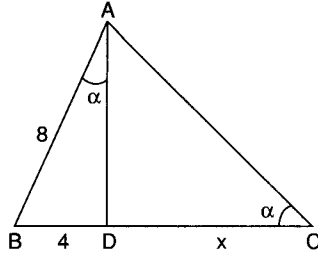
Şekilde $m(\widehat{BAC}) = m(\widehat{CAE}) = \alpha$,
 $[BC] \perp [AC]$, $[ED] \perp [AC]$
 $|AB| = 25$ br, $|BC| = 7$ br ve $|DE| = 2$ br ise
 $|AD| = x$ kaç br dir?

- A) 6 B) $\frac{48}{7}$ C) $\frac{45}{4}$ D) $\frac{25}{2}$ E) 14

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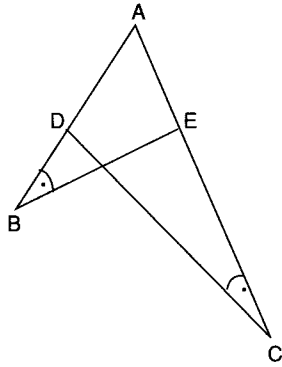
7)



Şekilde $m(\widehat{BAD}) = m(\widehat{ACD}) = \alpha$,
 $|AB| = 8$ br, $|BD| = 4$ br ise
 $|DC| = x$ kaç br dir?

- A) 8 B) 9 C) 10 D) 12 E) 14

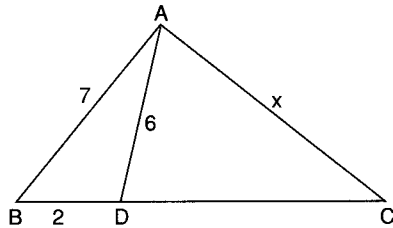
8)



Şekilde $m(\widehat{ABE}) = m(\widehat{ACD})$ ve
 $|AD| = 2|AE| = 2|BD| = 10$ br ise
 $|EC|$ kaç br dir?

- A) 10 B) 15 C) 20 D) 25 E) 30

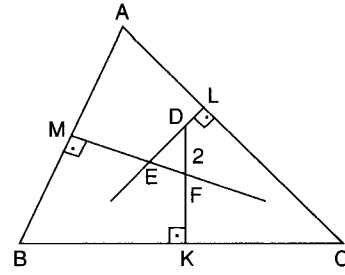
9)



Şekilde, $m(\widehat{BAC}) + m(\widehat{ADC}) = 180^\circ$,
 $|AB| = 7$ br, $|AD| = 6$ br ve
 $|BD| = 2$ br ise $|AC| = x$ kaç br dir?

- A) 15 B) 18 C) 21 D) 24 E) 27

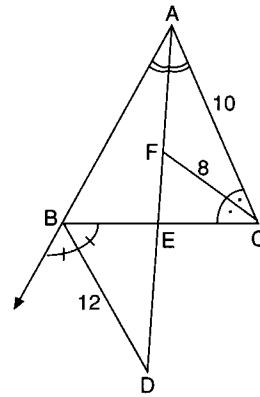
10)



Şekilde $[EL] \perp [AC]$, $[MF] \perp [AB]$,
 $[DK] \perp [BC]$, $|DF| = 2$
 $A(DEF) = 16 \text{ br}^2$ ve $A(ABC) = 144 \text{ br}^2$ ise
 $|BC|$ kaç br dir?

- A) 4 B) 6 C) 8 D) 9 E) 10

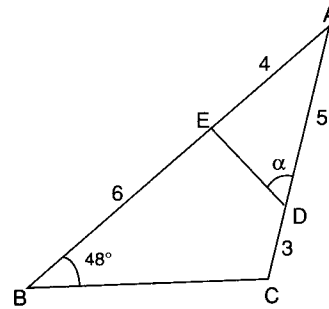
11)



Şekilde $[AD]$,
 $[CF]$, $[BD]$ açıortay
 $|AC| = 10$ br,
 $|FC| = 8$ br ve
 $|BD| = 12$ br ise
 $|AD|$ kaç br dir?

A) 15 B) 16
 C) 17 D) 18
 E) 20

12)



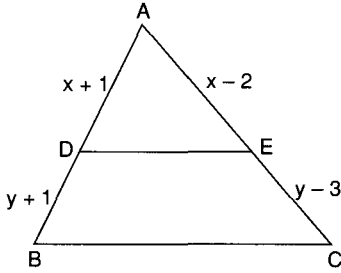
Şekilde $m(\widehat{ABC}) = 48^\circ$,
 $|AE| = 4$ br, $|EB| = 6$ br, $|AD| = 5$ br ve
 $|DC| = 3$ br ise $m(\widehat{ADE}) = \alpha$ kaç derecedir?

- A) 43 B) 48 C) 52 D) 60 E) 72

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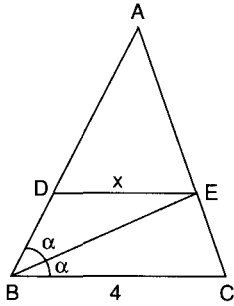
1)



Şekilde $[ED] \parallel [BC]$,
 $|AD| = (x + 1)$ br , $|DB| = (y + 1)$ br ,
 $|AE| = (x - 2)$ br ve $|EC| = (y - 3)$ br ise
 $4x - 3y$ kaçtır?

- A) $-\frac{5}{2}$ B) -2 C) -1 D) 1 E) $\frac{3}{2}$

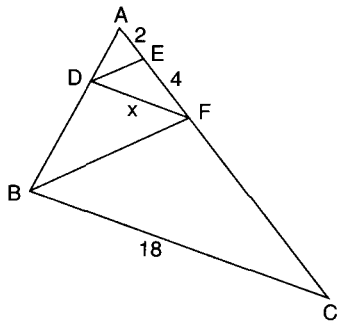
2)



Şekildeki ABC üçge-
 ninde $[DE] \parallel [BC]$,
 $m(\widehat{ABE}) = m(\widehat{ECB}) = \alpha$,
 $|AB| = 8$ br ve
 $|BC| = 4$ br ise
 $|DE| = x$ kaç br dir?

- A) $\frac{18}{5}$ B) $\frac{7}{2}$ C) 3 D) $\frac{8}{3}$ E) 2

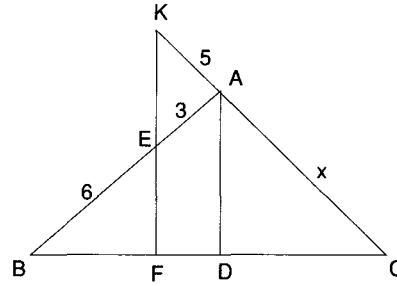
3)



Şekilde
 $[DE] \parallel [BF]$,
 $[DF] \parallel [BC]$,
 $|AE| = 2$ br ,
 $|EF| = 4$ br ve
 $|BC| = 18$ br ise
 $|DF| = x$ kaç
 br dir?

- A) 12 B) 10 C) 8 D) 6 E) 4

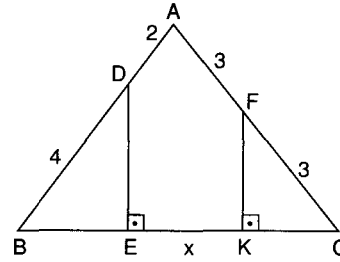
4)



Şekilde $|BD| = |DC|$, $[KF] \parallel [AD]$,
 $|AE| = 3$ br , $|BE| = 6$ br ve $|AK| = 5$ br ise
 $|AC| = x$ kaç br dir?

- A) 20 B) 15 C) 12 D) 9 E) 8

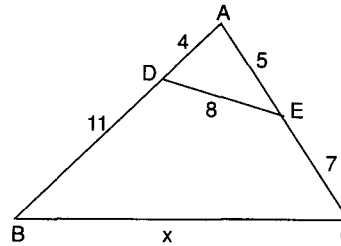
5)



Şekildeki ABC üçgeninde
 $[DE] \perp [BC]$, $[FK] \perp [BC]$,
 $|BC| = 6$ br , $|AD| = 2$ br , $|BD| = 4$ br ve
 $|AF| = |FC| = 3$ br ise $|EK| = x$ kaç br dir?

- A) $\frac{7}{2}$ B) 3 C) $\frac{5}{2}$ D) 2 E) $\frac{3}{2}$

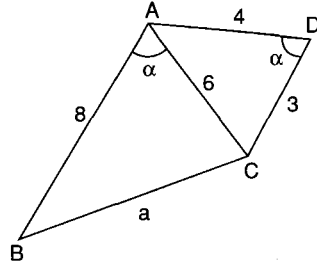
6)



Şekildeki ABC üçgeninde $|AD| = 4$ br ,
 $|BD| = 11$ br , $|AE| = 5$ br , $|EC| = 7$ br ve
 $|DE| = 8$ br ise $|BC| = x$ kaç br dir?

- A) 12 B) 16 C) 22 D) 24 E) 26

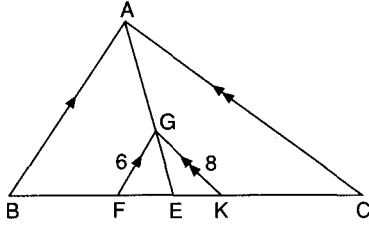
7)



Şekilde $m(\widehat{BAC}) = m(\widehat{ADC}) = \alpha$,
 $|AB| = 8$ br, $|AC| = 6$ br, $|AD| = 4$ br ve
 $|DC| = 3$ br ise $|BC| = a$ kaç br dir?

- A) 12 B) 10 C) 9 D) 8 E) 6

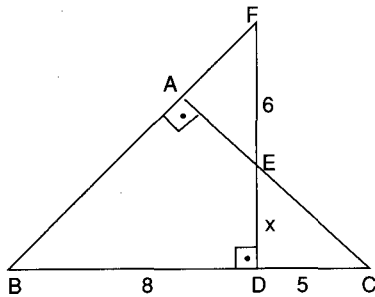
8)



Şekildeki ABC üçgeninde G ağırlık merkezi,
 $[GF] \parallel [AB]$, $[GK] \parallel [AC]$, $|GF| = 6$ br ve
 $|GK| = 8$ br ise $|AB| + |AC|$ kaç br dir?

- A) 14 B) 18 C) 28 D) 36 E) 42

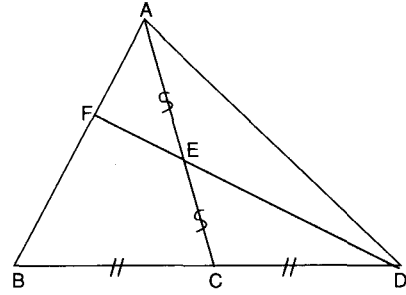
9)



Şekilde $[FD] \perp [BC]$ ve $[CA] \perp [BF]$,
 $|FE| = 6$ br, $|DC| = 5$ br ve $|BD| = 8$ br ise
 $|ED| = x$ kaç br dir?

- A) 6 B) 4 C) 3 D) 2 E) 1

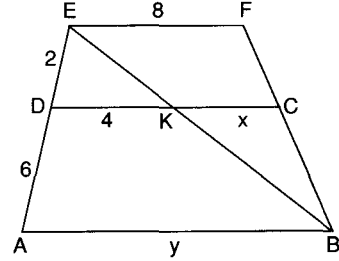
10)



Şekilde $|BC| = |CD|$, $|AE| = |EC|$ ve
 $2|AF| = 3|EF|$ ise $\frac{|FB|}{|ED|}$ kaçtır?

- A) 1 B) $\frac{3}{2}$ C) 2 D) $\frac{5}{2}$ E) 3

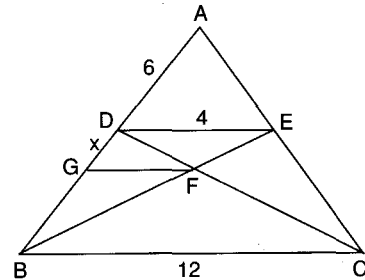
11)



Şekilde $[AB] \parallel [CD] \parallel [EF]$,
 $|EF| = 8$ br, $|ED| = 2$ br, $|DA| = 6$ br,
 $|DK| = 4$ br, $|KC| = x$ br ve
 $|AB| = y$ br ise $x + y$ kaç br dir?

- A) 9 B) 12 C) 18 D) 20 E) 22

12)



Şekildeki ABC üçgeninde $[DE] \parallel [BC] \parallel [GF]$,
 $|AD| = 6$ br, $|DE| = 4$ br ve
 $|BC| = 12$ br ise $|GD| = x$ kaç br dir?

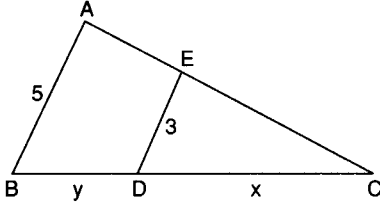
- A) 2 B) 3 C) $\frac{7}{2}$ D) 4 E) $\frac{9}{2}$

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1)

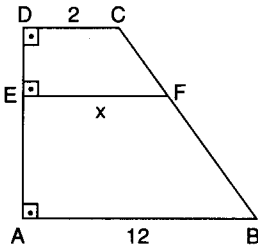


Şekildeki ABC üçgeninde $[DE] \parallel [BC]$,
 $|AB| = 5$ br ve $|DE| = 3$ br ise

$\frac{y}{x}$ kaçtır?

- A) $\frac{2}{3}$ B) $\frac{5}{3}$ C) $\frac{5}{2}$ D) 5 E) 2

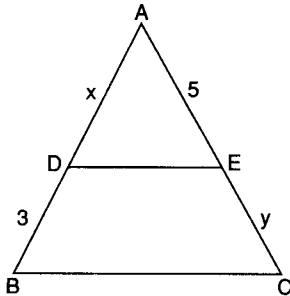
2)



Şekilde $[DC] \perp [AD]$,
 $[EF] \perp [AD]$,
 $[AB] \perp [AD]$,
 $|DC| = 2$ br ,
 $|AB| = 12$ br ve
 $3|DE| = 2|AE|$ ise
 $|EF| = x$ kaç br dir?

- A) 3 B) 4 C) 5 D) 6 E) 8

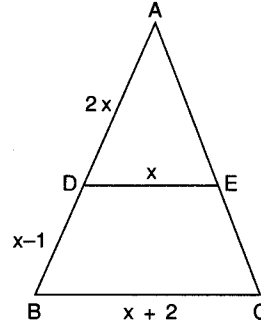
3)



Şekilde $[DE] \parallel [BC]$,
 $|AE| = 5$ br ve $|DB| = 3$ br ise
 $|AD| \cdot |EC| = x$ kaçtır?

- A) 9 B) $\frac{15}{4}$ C) 15 D) $\frac{27}{4}$ E) 9

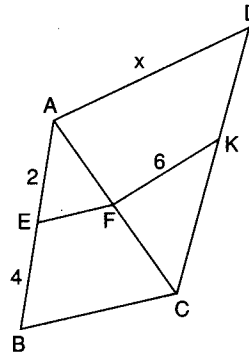
4)



Şekilde $[DE] \parallel [BC]$,
 $|AD| = 2x$ br ,
 $|DB| = x - 1$ br
 $|DE| = x$ br ve
 $|BC| = x + 2$ br ise
 $|AB|$ kaç br dir?

- A) 7 B) 8 C) 11 D) 14 E) 17

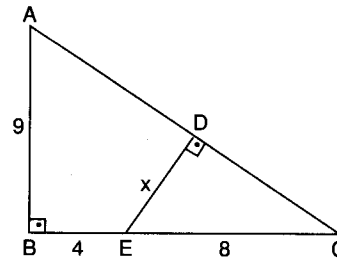
5)



Şekilde
 $[EF] \parallel [BC]$,
 $[FK] \parallel [AD]$,
 $|AE| = 2$ br ,
 $|EB| = 4$ br ve
 $|KF| = 6$ br ise
 $|AD| = x$ kaç
br dir?

- A) 6 B) 7 C) 8 D) 9 E) 10

6)



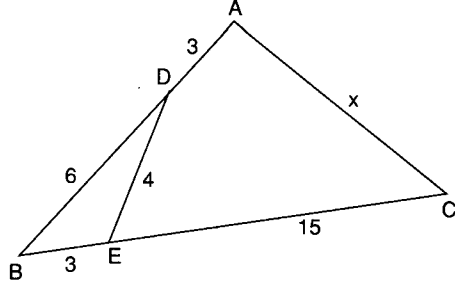
ABC diküçgeninde $[ED] \perp [AC]$,
 $|AB| = 9$ br , $|BE| = 4$ br ve
 $|EC| = 8$ br ise $|DE| = x$ kaç br dir?

- A) 4,8 B) 4 C) 3,6 D) 3 E) 2,4

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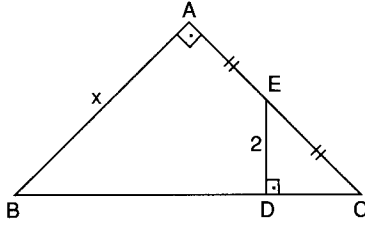
7)



Şekilde $|AD| = 3$ br, $|DB| = 6$ br,
 $|DE| = 4$ br, $|BE| = 3$ br ve
 $|EC| = 15$ br ise $|AC| = x$ kaç br dir?

- A) 6 B) 8 C) 10 D) 12 E) 16

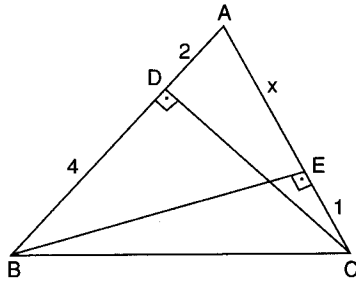
8)



Şekilde ABC diküçgen $|AE| = |EC|$
 $|BD| = 5|DC|$, $[ED] \perp [BC]$ ve
 $|ED| = 2$ br ise $|AB| = x$ kaç br dir?

- A) $2\sqrt{3}$ B) 3 C) 4 D) $4\sqrt{3}$ E) $6\sqrt{3}$

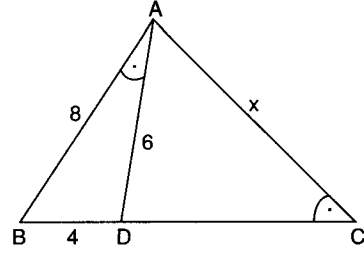
9)



Şekilde $[CD] \perp [AB]$, $[BE] \perp [AC]$
 $|AD| = 2$ br, $|BD| = 4$ br ve
 $|EC| = 1$ br ise $|AE| = x$ kaç br dir?

- A) 3 B) 4 C) 5 D) 6 E) 7

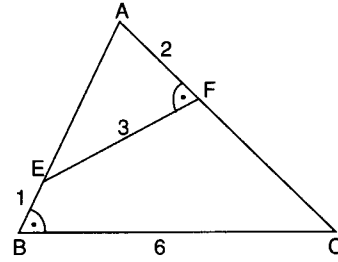
10)



Şekilde $m(\widehat{BAD}) = m(\widehat{ACB})$,
 $|AB| = 8$ br, $|AD| = 6$ br ve
 $|BD| = 4$ br ise $|AC| = x$ kaç br dir?

- A) 18 B) 16 C) 12 D) 10 E) 8

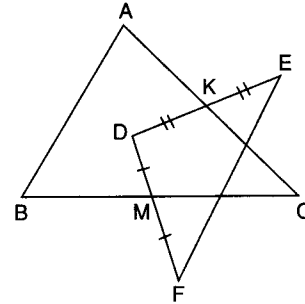
11)



Şekildeki ABC üçgeninde $m(\widehat{AEF}) = m(\widehat{ABC})$,
 $|BC| = 6$ br, $|EF| = 3$ br, $|AF| = 2$ br ve
 $|EB| = 1$ br ise $|AE| + |FC|$ kaç br dir?

- A) 2 B) 3 C) 4 D) 5 E) 7

12)



Şekilde $|AK| = |KC|$, $|BM| = |MC|$
 $|DK| = |KE|$, $|DM| = |MF|$ ve
 $|EF| = 18$ br ise $|AB|$ kaç br dir?

- A) 18 B) 20 C) 24 D) 26 E) 28

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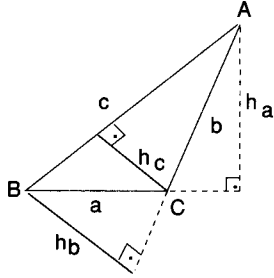


ÜÇGENİN ALAN FORMÜLLERİ

$A(ABC) = S$ olsun.

$$S = \frac{\text{Taban} \times \text{Yükseklik}}{2}$$

$$S = \frac{a \times h_a}{2} = \frac{b \times h_b}{2} = \frac{c \times h_c}{2}$$

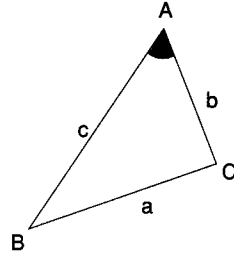


İki kenar ve aradaki açı biliniyorsa

$$A(ABC) = \frac{1}{2} \cdot a \cdot b \cdot \sin \hat{C}$$

$$= \frac{1}{2} \cdot b \cdot c \cdot \sin \hat{A}$$

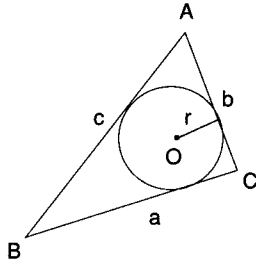
$$= \frac{1}{2} \cdot a \cdot c \cdot \sin \hat{B}$$



Çevresi ve iç teğet çemberinin yarıçapı biliniyorsa

$$A(ABC) = u \cdot r$$

$$(\text{Çevre} = 2u = a + b + c)$$



Üç kenar uzunluğu biliniyorsa

$$\text{Çevre} = 2u = a + b + c$$

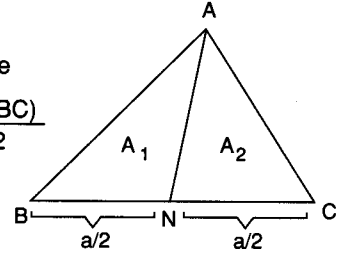
$$A(ABC) = \sqrt{u(u-a)(u-b)(u-c)}$$

- Taban ve yükseklikleri eşit üçgenlerin alanları da eşittir.
- Tabanları eşit üçgenlerin alanları oranı yükseklikleri oranına eşittir.
- Yükseklikleri eşit üçgenlerin alanları oranı tabanları oranına eşittir.
- Benzer üçgenlerin alanları oranı benzerlik oranının karesine eşittir.

KENARORTAYLARIN ALANLA İLGİLİ ÖZELLİKLERİ

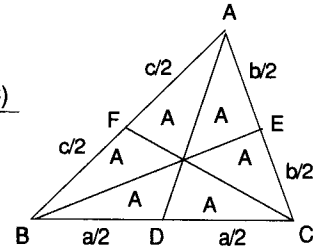
$$|BN| = |NC| \text{ ise}$$

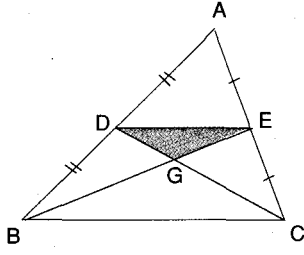
$$A_1 = A_2 = \frac{A(ABC)}{2}$$



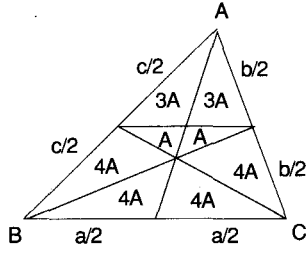
Üç kenarortayın meydana getirdiği altı üçgenin alanları eşittir.

$$A = \frac{A(ABC)}{6}$$

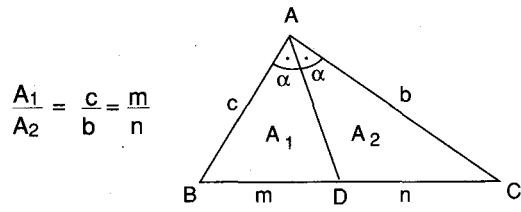




$$A(GDE) = \frac{1}{2} A(GBD) = \frac{1}{12} A(ABC)$$



Açıortayın alanla ilgili özelliği

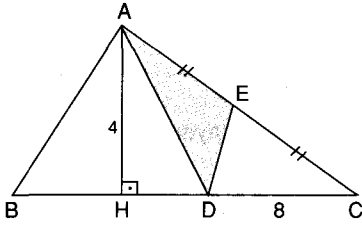


$$\frac{A_1}{A_2} = \frac{c}{b} = \frac{m}{n}$$

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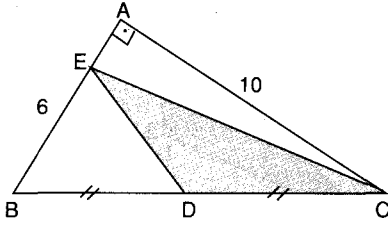
1)



Şekilde $[AH] \perp [BC]$,
 $|AH| = 4$ br, $|DC| = 8$ br ve
 $|AE| = |EC|$ ise $A(ADE)$ kaç br^2 dir?

- A) 4 B) 8 C) 12 D) 16 E) 24

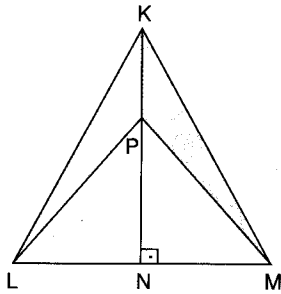
2)



Şekilde $[AB] \perp [AC]$,
 $|BD| = |DC|$, $|BE| = 6$ br ve $|AC| = 10$ br ise
 $A(EDC)$ kaç br^2 dir?

- A) 12 B) 15 C) 18 D) 20 E) 24

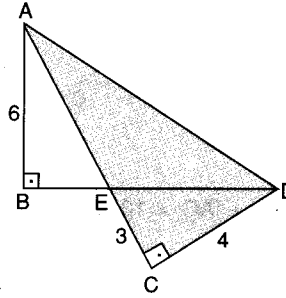
3)



Şekildeki KLM üçgeninde $[KN] \perp [LM]$ ve
P noktası $[KN]$ üzerindedir.
 $|LM| = 10$ br ve $|KP| = 4$ br ise
taralı alan kaç br^2 dir?

- A) 12 B) 14 C) 16 D) 18 E) 20

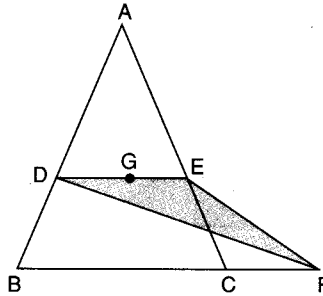
4)



Şekilde
 $m(\hat{B}) = m(\hat{C}) = 90^\circ$,
 $|AB| = 6$ br,
 $|EC| = 3$ br ve
 $|CD| = 4$ br ise
 $A(ACD)$ kaç
 br^2 dir?

- A) 18 B) 21 C) 24 D) 27 E) 30

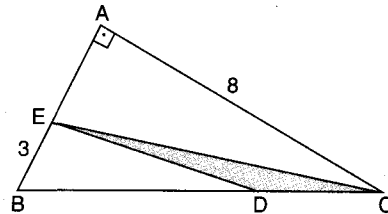
5)



Şekilde G noktası ağırlık merkezi ve
 $[DE] \parallel [BF]$ ise $\frac{A(DEF)}{A(ABC)}$ kaçtır?

- A) $\frac{1}{7}$ B) $\frac{2}{9}$ C) $\frac{1}{5}$ D) $\frac{1}{4}$ E) $\frac{3}{4}$

6)



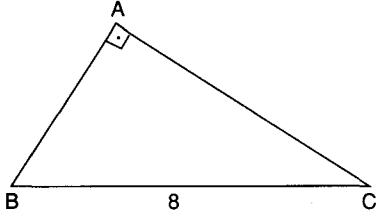
Şekildeki ABC diküçgeninde,
 $|BE| = 3$ br, $|AC| = 8$ br ve
 $|BD| = 2|DC|$ ise $A(EDC)$ kaç br^2 dir?

- A) 2 B) 3 C) 4 D) 5 E) 6

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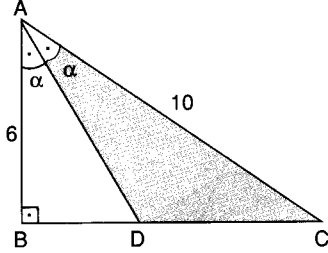
7)



ABC diküçgeninde ,
 $|BC| = 8$ br ve $|AB| + |AC| = 12$ br ise
 $A(ABC)$ kaç br^2 dir?

- A) 15 B) 20 C) 30 D) 35 E) 40

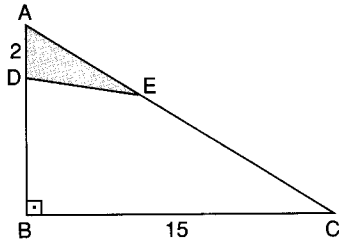
8)



Şekilde $[AB] \perp [BC]$, $m(\widehat{BAD}) = m(\widehat{CAD})$,
 $|AB| = 6$ br ve $|AC| = 10$ br ise
 $A(ADC)$ kaç br^2 dir?

- A) 12 B) 15 C) 18 D) 24 E) 30

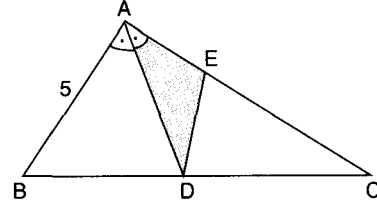
9)



Şekildeki ABC diküçgeninde $2|EC| = 3|AE|$
 $|AD| = 2$ br ve $|BC| = 15$ br ise
 $A(ADE)$ kaç br^2 dir?

- A) 4 B) 6 C) 8 D) 9 E) 12

10)



Şekilde $[AD]$ açıortaydır.

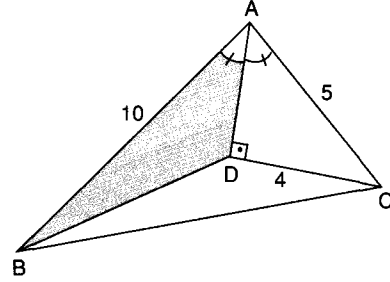
$$|AE| = \frac{|EC|}{2} = 2 \text{ br ,}$$

$|AB| = 5$ br ve $A(ABC) = 33 \text{ br}^2$ ise

$A(ADE)$ kaç br^2 dir?

- A) 4 B) 5 C) 6 D) 8 E) 9

11)



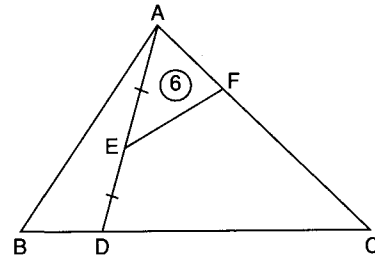
Şekilde $[AD] \perp [DC]$, $[AD]$ açıortay ,

$|AB| = 10$ br , $|AC| = 5$ br ve

$|DC| = 4$ br ise **$A(ABD)$ kaç br^2 dir?**

- A) 21 B) 18 C) 15 D) 12 E) 9

12)



Şekildeki ABC üçgeninde

A, E, D doğrusal , $|AE| = |ED|$,

$2|AF| = |FC|$, $3|BD| = |DC|$ ve

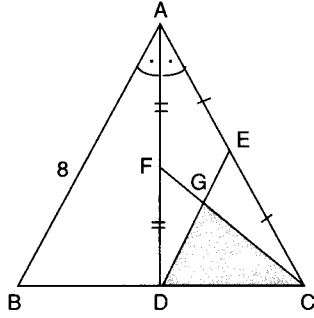
$A(AEF) = 6 \text{ br}^2$ ise **$A(ABC)$ kaç br^2 dir?**

- A) 36 B) 42 C) 48 D) 54 E) 60

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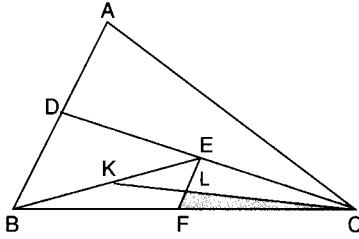
1)



Şekilde $[AD]$ açıortay, $|AF| = |FD|$,
 $|AE| = |EC|$, $|AB| = 8$ br, $|AC| = 12$ br ve
 $A(ABC) = 15 \text{ br}^2$ ise $A(GDC)$ kaç br^2 dir?

- A) 5 B) 4 C) 3 D) $\frac{5}{2}$ E) $\frac{3}{2}$

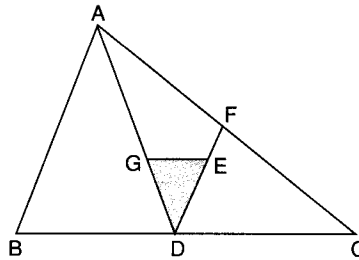
2)



Şekilde, $|AD| = |DB|$, $|DE| = |EC|$
 $|BF| = |FC|$ ve $|BK| = |KE|$ dir.
 $A(FCL) = 3 \text{ br}^2$ ise $A(ABC)$ kaç br^2 dir?

- A) 36 B) 48 C) 54 D) 60 E) 72

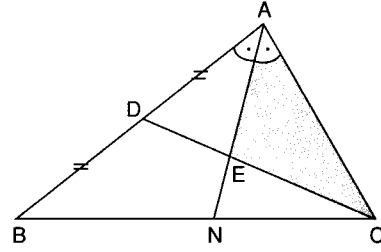
3)



Şekilde G noktası ABC üçgeninin ve
E noktası ADC üçgeninin ağırlık merkezi ise
 $\frac{A(ABC)}{A(GDE)}$ kaçtır?

- A) 14 B) 16 C) 18 D) 20 E) 22

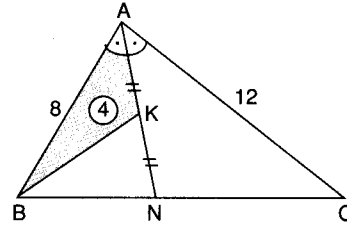
4)



ABC üçgeninde $[CD]$ kenarortay,
 $[AN]$ açıortaydır.
 $|AB| = 20$ br, $|AC| = 12$ br ve
 $A(ABC) = 66 \text{ br}^2$ ise $A(AEC)$ kaç br^2 dir?

- A) 24 B) 22 C) 20 D) 18 E) 16

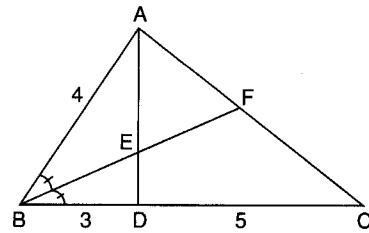
5)



Şekilde $[AN]$ açıortay, $|AK| = |KN|$
 $|AB| = 8$ br, $|AC| = 12$ br ve
 $A(ABK) = 4 \text{ br}^2$ ise $A(ABC)$ kaç br^2 dir?

- A) 12 B) 16 C) 18 D) 20 E) 24

6)



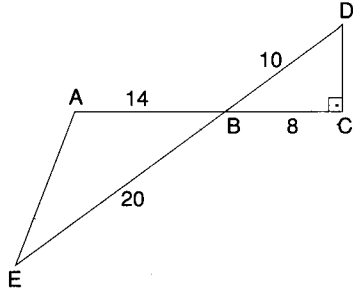
Şekildeki ABC üçgeninde $[BF]$ açıortay,
 $|BD| = 3$ br, $|AB| = 4$ br ve
 $|CD| = 5$ br ise $\frac{A(AEF)}{A(EBA)}$ kaçtır?

- A) $\frac{3}{7}$ B) $\frac{5}{9}$ C) $\frac{5}{7}$ D) $\frac{7}{9}$ E) 1

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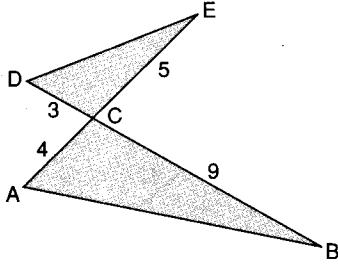
7)



Şekilde $[AC] \perp [DC]$, $|AB| = 14$ br, $|BC| = 8$ br, $|DB| = 10$ br ve $|EB| = 20$ br ise $A(AEB)$ kaç br^2 dir?

- A) 74 B) 76 C) 80 D) 82 E) 84

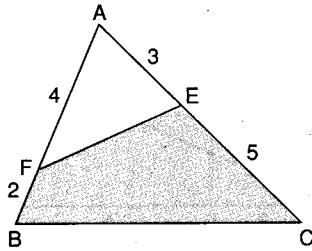
8)



Şekilde, $|DC| = 3$ br, $|CE| = 5$ br, $|AC| = 4$ br, $|BC| = 9$ br ve taralı alanlar toplamı $17 br^2$ ise $A(ABC)$ kaç br^2 dir?

- A) 7 B) 8 C) 10 D) 12 E) 14

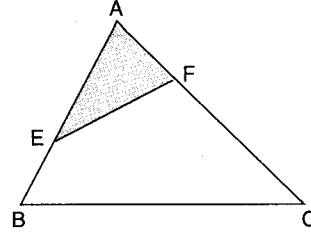
9)



Şekilde $|AF| = 4$ br, $|AE| = 3$ br $|BF| = 2$ br, $|EC| = 5$ br ve $A(ABC) = 24 br^2$ ise taralı bölgenin alanı kaç br^2 dir?

- A) 12 B) 14 C) 15 D) 18 E) 20

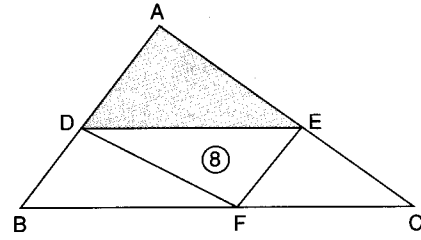
10)



Şekildeki ABC üçgeninde $2|AE| = 3|EB|$ ve $|FC| = 2|AF|$ ise $\frac{A(ABC)}{A(AEF)}$ kaçtır?

- A) 3 B) 4 C) 5 D) 6 E) 7

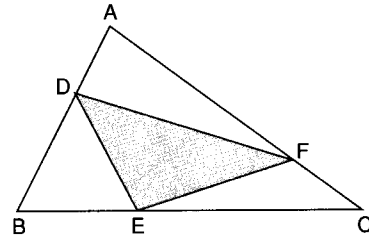
11)



Şekilde $[DE] \parallel [BC]$, $7|EC| = 4|AE|$ ve $A(DEF) = 8 br^2$ ise $A(ADE)$ kaç br^2 dir?

- A) 12 B) 14 C) 15 D) 16 E) 21

12)



Şekilde $|BD| = 2|AD|$, $|AF| = 3|FC|$, $|CE| = 4|BE|$ ve $A(DEF) = 50 br^2$ ise $A(ABC)$ kaç br^2 dir?

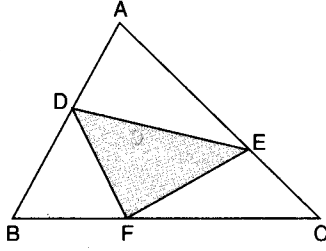
- A) 75 B) 100 C) 120 D) 125 E) 150

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1)



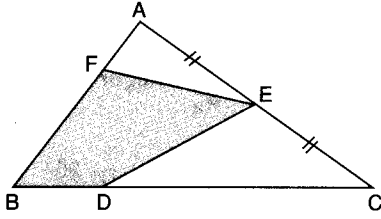
Şekildeki ABC üçgeninde

$$\frac{|AD|}{|BD|} = \frac{1}{2}, \quad \frac{|AE|}{|EC|} = 3 \text{ ve } \frac{|BF|}{|FC|} = \frac{3}{4} \text{ ise}$$

$\frac{A(DEF)}{A(ABC)}$ kaçtır?

- A) $\frac{2}{9}$ B) $\frac{11}{28}$ C) $\frac{9}{28}$ D) $\frac{13}{27}$ E) $\frac{24}{37}$

2)

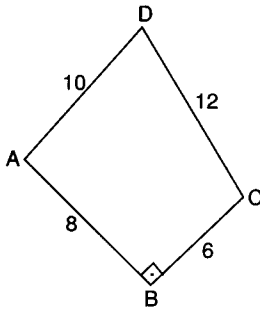


Şekilde $|AE| = |EC|$, $\frac{|AF|}{|AB|} = \frac{|BD|}{|DC|} = \frac{1}{3}$ ve

$A(ABC) = 72 \text{ br}^2$ ise $A(BDEF)$ kaç br^2 dir?

- A) 33 B) 30 C) 27 D) 24 E) 21

3)

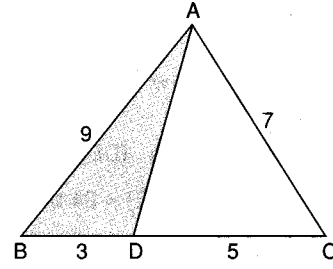


Şekildeki dörtgende

$|AB| = 8 \text{ br}$,
 $|BC| = 6 \text{ br}$,
 $|AD| = 10 \text{ br}$ ve
 $|DC| = 12 \text{ br}$ ise
 $A(ABCD)$ kaç
 br^2 dir?

- A) 48 B) 56 C) 64 D) 68 E) 72

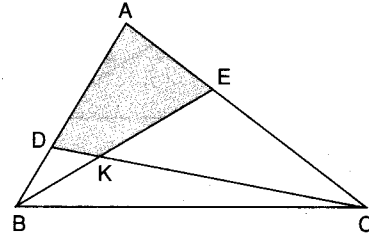
4)



Şekildeki ABC
üçgeninde
 $|AB| = 9 \text{ br}$,
 $|AC| = 7 \text{ br}$,
 $|BD| = 3 \text{ br}$ ve
 $|DC| = 5 \text{ br}$ ise
 $A(ABD)$ kaç
 br^2 dir?

- A) $\frac{7\sqrt{5}}{2}$ B) $\frac{9\sqrt{5}}{2}$ C) $\frac{11\sqrt{5}}{2}$
D) $\frac{13\sqrt{5}}{2}$ E) $\frac{15\sqrt{5}}{2}$

5)

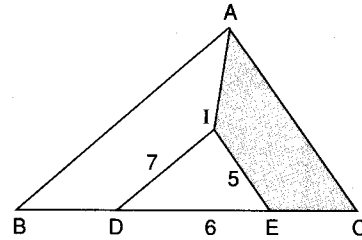


Şekildeki ABC üçgeninde $|AD| = 3|BD|$ ve

$\frac{|AE|}{|EC|} = \frac{4}{5}$ ise $\frac{A(ADKE)}{A(ABC)}$ kaçtır?

- A) $\frac{25}{72}$ B) $\frac{29}{72}$ C) $\frac{11}{24}$ D) $\frac{11}{36}$ E) $\frac{29}{81}$

6)



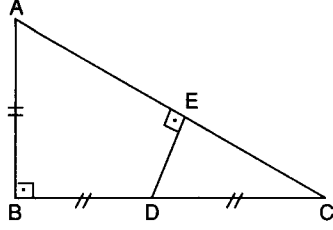
Şekilde I noktası ABC üçgeninin iç teğet çemberinin merkezi, $[AB] \parallel [DI]$, $[AC] \parallel [EI]$,
 $|ID| = 7 \text{ br}$, $|IE| = 5 \text{ br}$ ve $|DE| = 6 \text{ br}$ ise
 $A(AIEC)$ kaç br^2 dir?

- A) $6\sqrt{6}$ B) $12\sqrt{6}$ C) $18\sqrt{6}$ D) $20\sqrt{6}$ E) $24\sqrt{6}$

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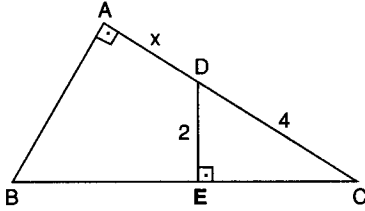
7)



Şekildeki ABC diküçgeninde $[DE] \perp [AC]$,
 $|AB| = |BD| = |DC|$ ve $A(ABDE) = 24 \text{ br}^2$ ise
 $A(ABC)$ kaç br^2 dir?

- A) 26 B) 28 C) 30 D) 34 E) 36

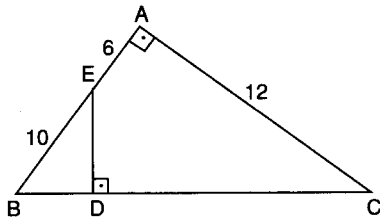
8)



Şekildeki ABC diküçgeninde $[DE] \perp [BC]$,
 $|DE| = 2 \text{ br}$, $|DC| = 4 \text{ br}$ ve
 $A(ABED) = 2 \cdot A(CDE)$ ise
 $|AD| = x$ kaç br dir?

- A) 1,5 B) 2 C) 3 D) 3,5 E) 5

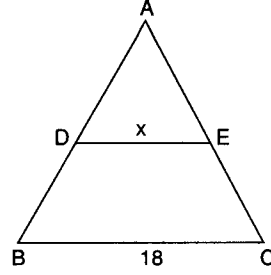
9)



Şekilde $m(\hat{A}) = m(\hat{D}) = 90^\circ$,
 $|AC| = 12 \text{ br}$, $|AE| = 6 \text{ br}$ ve $|BE| = 10 \text{ br}$ ise
 $A(AEDC)$ kaç br^2 dir?

- A) 72 B) 64 C) 60 D) 56 E) 48

10)



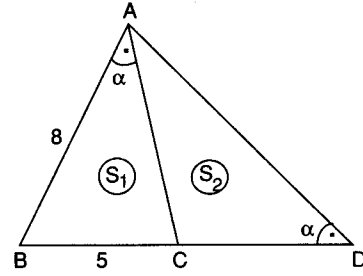
Şekildeki ABC üçge-
 ninde $[DE] \parallel [BC]$ ve

$$\frac{A(ADE)}{A(BCED)} = \frac{4}{5} \text{ ise}$$

$|DE| = x$ kaç br dir?

- A) 8 B) 9 C) 10 D) 12 E) 14

11)

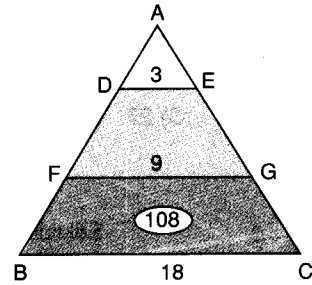


Şekilde $m(\hat{BAC}) = m(\hat{ADB}) = \alpha$,
 $|AB| = 8 \text{ br}$ ve $|BC| = 5 \text{ br}$ ve $A(ABC) = S_1$ ve

$A(ACD) = S_2$ ise **$\frac{S_1}{S_2}$ kaçtır?**

- A) $\frac{5}{8}$ B) $\frac{8}{5}$ C) $\frac{25}{64}$ D) $\frac{25}{39}$ E) $\frac{16}{25}$

12)



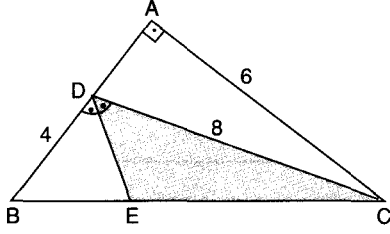
Şekildeki ABC üçgeninde $[DE] \parallel [FG] \parallel [BC]$,
 $|DE| = 3 \text{ br}$, $|FG| = 9 \text{ br}$, $|BC| = 18 \text{ br}$ ve
 $A(FBCG) = 108 \text{ br}^2$ ise
 $A(DEGF)$ kaç br^2 dir?

- A) 28 B) 30 C) 32 D) 36 E) 40

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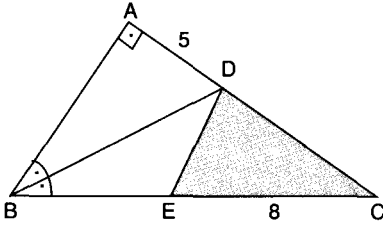
1)



Şekildeki ABC diküçgeninde $m(\widehat{BDE}) = m(\widehat{EDC})$, $|DB| = 4$ br, $|AC| = 6$ br ve $|DC| = 8$ br ise $A(EDC)$ kaç br^2 dir?

- A) 8 B) 12 C) 16 D) 20 E) 24

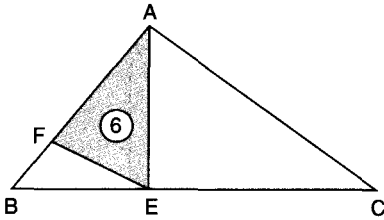
2)



Şekildeki ABC diküçgeninde [BD] açıortay, $|AD| = 5$ br ve $|EC| = 8$ br ise $A(DEC)$ kaç br^2 dir?

- A) 8 B) 10 C) 16 D) 18 E) 20

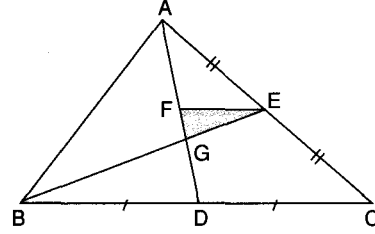
3)



Şekildeki ABC üçgeninde $A(AFE) = 6$ br^2 , $|AF| = 2|BF|$ ve $|CE| = 3|EB|$ ise $A(ABC)$ kaç br^2 dir?

- A) 30 B) 36 C) 40 D) 42 E) 46

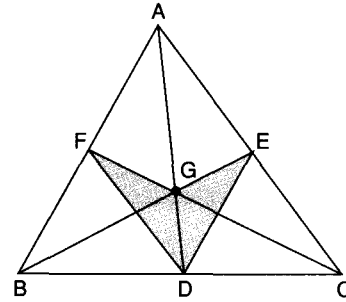
4)



Şekilde [AD], [BE] kenarortay ve $[FE] \parallel [BC]$ ise $\frac{A(FGE)}{A(ABC)}$ kaçtır?

- A) $\frac{1}{48}$ B) $\frac{1}{36}$ C) $\frac{1}{24}$ D) $\frac{1}{12}$ E) $\frac{1}{6}$

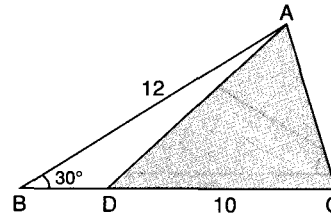
5)



Şekildeki ABC üçgeninin ağırlık merkezi G noktası ve $A(ABC) = 24$ br^2 ise taralı alan kaç br^2 dir?

- A) 12 B) 8 C) 6 D) 4 E) 2

6)



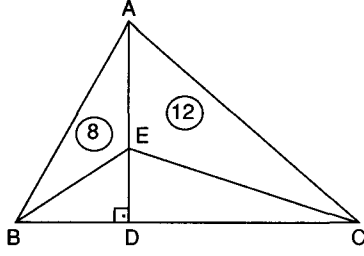
Şekildeki ABC üçgeninde $|AB| = 12$ br, $|DC| = 10$ br ve $m(\widehat{ABC}) = 30^\circ$ ise $A(ADC)$ kaç br^2 dir?

- A) 60 B) $30\sqrt{3}$ C) 30 D) $20\sqrt{3}$ E) 20

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7)

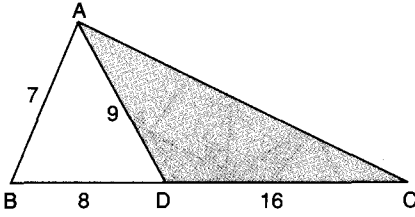


Şekildeki ABC üçgeninde $[AD] \perp [BC]$,
 $A(ABE) = 8 \text{ br}^2$ ve $A(AEC) = 12 \text{ br}^2$ ise

$\frac{|BD|}{|DC|}$ kaçtır?

- A) $\frac{6}{7}$ B) $\frac{5}{6}$ C) $\frac{4}{5}$ D) $\frac{2}{3}$ E) $\frac{1}{3}$

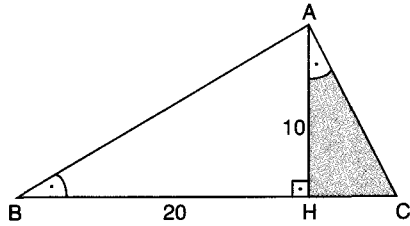
8)



Şekildeki ABC üçgeninde $|AB| = 7 \text{ br}$,
 $|BD| = 8 \text{ br}$, $|AD| = 9 \text{ br}$ ve $|DC| = 16 \text{ br}$ ise
 $A(ADC)$ kaç br^2 dir?

- A) $24\sqrt{5}$ B) $30\sqrt{2}$ C) 42 D) 56 E) 80

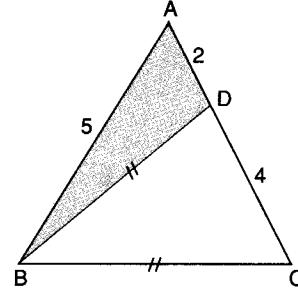
9)



Şekildeki ABC üçgeninde $m(\widehat{HAC}) = m(\widehat{ABC})$,
 $[AH] \perp [BC]$, $|AH| = 10 \text{ br}$,
 $|BH| = 20 \text{ br}$ ise $A(AHC)$ kaç br^2 dir?

- A) 50 B) 40 C) 35 D) 30 E) 25

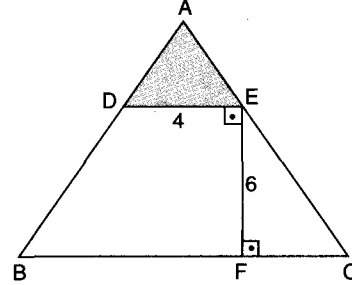
10)



Şekildeki ABC üçgeninde $|BD| = |BC|$,
 $|AD| = 2 \text{ br}$, $|DC| = 4 \text{ br}$ ve $|AB| = 5 \text{ br}$ ise
 $A(ABD)$ kaç br^2 dir?

- A) 2 B) 3 C) 5 D) 10 E) 12

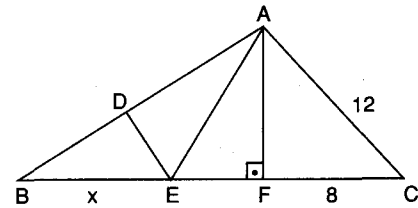
11)



Şekildeki ABC üçgeninde
 $m(\widehat{DEF}) = m(\widehat{EFC}) = 90^\circ$,
 $|EF| = 6 \text{ br}$, $|DE| = 4 \text{ br}$ ve $|BC| = 12 \text{ br}$ ise
 $A(ADE)$ kaç br^2 dir?

- A) 12 B) 10 C) 8 D) 6 E) 4

12)



Şekildeki ABC üçgeninde $[AF] \perp [BC]$,
 $5|BD| = 3|AD|$, $|AC| = 12 \text{ br}$, $|FC| = 8 \text{ br}$ ve
 $A(BED) = 15 \text{ br}^2$ ise $|BE| = x$ kaç br dir?

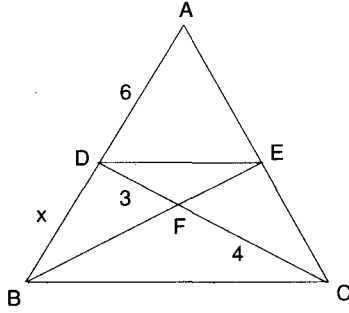
- A) 8 B) 6 C) $4\sqrt{5}$ D) 3 E) $2\sqrt{2}$

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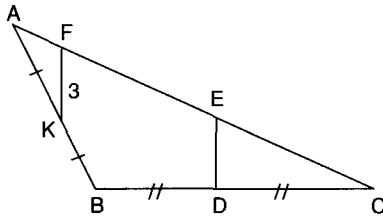
1)



Şekilde $[DE] \parallel [BC]$, $|AD| = 6$ br, $|DF| = 3$ br ve $|FC| = 4$ br ise $|BD| = x$ kaç br dir?

- A) 9 B) 6 C) 4 D) 3 E) 2

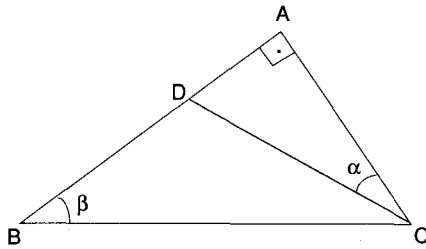
2)



Şekildeki ABC üçgeninde $[FK] \parallel [DE]$, $|AK| = |KB|$, $|BD| = |DC|$, $|FK| = 3$ br ve $3|AF| = |FE| = 2|DE|$ ise $|AC|$ kaç br dir?

- A) 6 B) 8 C) 9 D) 10 E) 12

3)

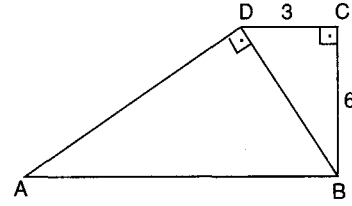


Şekildeki ABC diküçgeninde $|DC| = 2|AD|$, $m(\widehat{ACD}) = \alpha$, $m(\widehat{ABC}) = \beta$ ve $\alpha + \beta = 60^\circ$ ise

$\frac{|BD|}{|DA|}$ kaçtır?

- A) $\frac{2}{3}$ B) 1 C) $\frac{4}{3}$ D) $\frac{3}{2}$ E) 2

4)

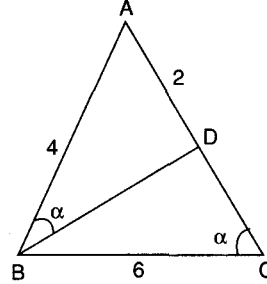


Şekilde $[AB] \parallel [CD]$, $[AD] \perp [DB]$, $[DC] \perp [CB]$ $|DC| = 3$ br ve $|BC| = 6$ br ise

ABD üçgeninin çevresi kaç br dir?

- A) $8\sqrt{5} + 10$ B) $8\sqrt{5} + 12$ C) $9\sqrt{5} + 15$
D) $8\sqrt{5} + 18$ E) $9\sqrt{5} + 18$

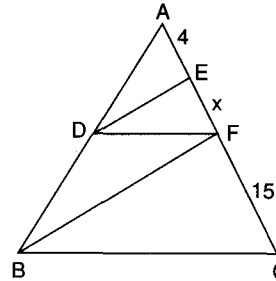
5)



Şekildeki ABC üçgeninde $m(\widehat{ABD}) = m(\widehat{ACB})$, $|AD| = 2$ br, $|AB| = 4$ br ve $|BC| = 6$ br ise $|BD| + |DC|$ kaç br dir?

- A) 6 B) 7 C) 8 D) 9 E) 10

6)



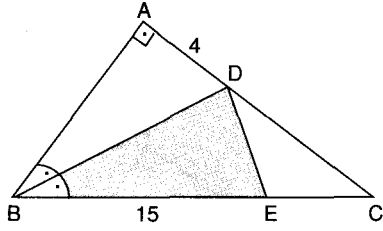
Şekildeki ABC üçgeninde $[BC] \parallel [DF]$, $[DE] \parallel [BF]$ $|AE| = 4$ br ve $|CF| = 15$ br ise $|EF| = x$ kaç br dir?

- A) 6 B) 7 C) 8 D) 9 E) 10

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7)

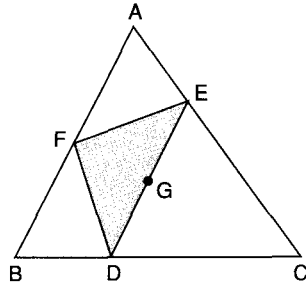


Şekildeki ABC diküçgeninde [BD] açıortaydır, $|BE| = 15$ br ve $|AD| = 4$ br ise

$A(BDE)$ kaç br^2 dir?

- A) 20 B) 28 C) 30 D) 35 E) 45

8)

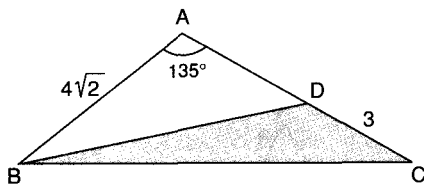


Şekildeki ABC üçgeninde G noktası ağırlık merkezi, $[DE] \parallel [AB]$ ve $A(DEF) = 8$ br² ise

$A(ABC)$ kaç br² dir?

- A) 16 B) 18 C) 24 D) 32 E) 36

9)

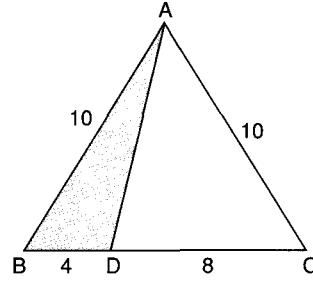


Şekildeki ABC üçgeninde $m(\widehat{BAC}) = 135^\circ$, $|AB| = 4\sqrt{2}$ br ve $|DC| = 3$ br ise

$A(BCD)$ kaç br² dir?

- A) 5 B) 6 C) 8 D) 12 E) 15

10)



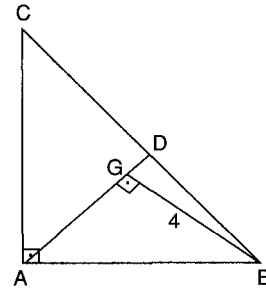
Şekildeki ABC üçgeninde

$|AB| = |AC| = 10$ br, $|BD| = 4$ br ve

$|DC| = 8$ br ise $A(ABD)$ kaç br² dir?

- A) 12 B) 14 C) 15 D) 16 E) 18

11)

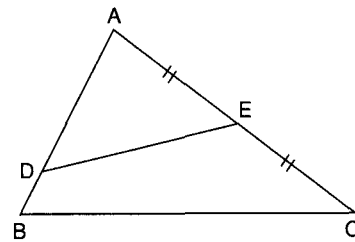


Şekildeki ABC diküçgeninde G noktası ağırlık merkezi, $[AD] \perp [BG]$ ve $|BG| = 4$ br ise

$A(ABC)$ kaç br² dir?

- A) $10\sqrt{2}$ B) $12\sqrt{2}$ C) $15\sqrt{2}$
D) $16\sqrt{2}$ E) $12\sqrt{6}$

12)



Şekildeki ABC üçgeninde

$|AE| = |EC|$ ve $|AD| = 3|DB|$ ise

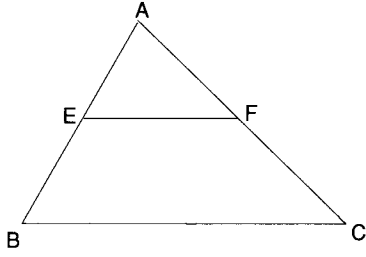
$\frac{A(ADE)}{A(BCED)}$ kaçtır?

- A) $\frac{3}{8}$ B) $\frac{3}{5}$ C) $\frac{1}{2}$ D) $\frac{2}{3}$ E) 1

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1)



ABC bir üçgen

$E \in [AB]$, $F \in [AC]$, $[EF] \parallel [BC]$

Yukarıdaki şekilde

$A(AEF) = A(EBCF)$ olduğuna göre

$\frac{|AE|}{|AB|}$ oranı kaçtır?

A) $\frac{1}{4}$

B) $\frac{1}{3}$

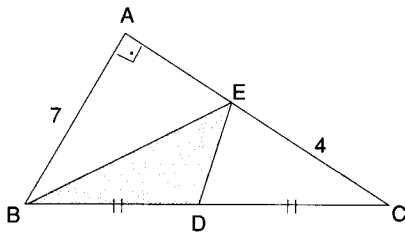
C) $\frac{1}{2}$

D) $\frac{1}{\sqrt{2}}$

E) $\frac{1}{\sqrt{3}}$

(1995 - I)

2)



$m(\widehat{BAC}) = 90^\circ$

$|AB| = 7 \text{ cm}$, $|EC| = 4 \text{ cm}$, $|BD| = |DC|$

Şekildeki verilere göre,

EBD üçgeninin alanı kaç cm^2 dir?

A) 3

B) 4

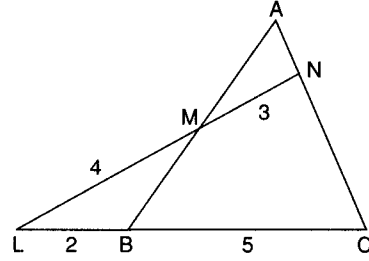
C) 7

D) 9

E) 11

(1995 - II)

3)



L, M, N ve L, B, C noktaları doğrusal

$|LB| = 2 \text{ br}$, $|BC| = 5 \text{ br}$

$|LM| = 4 \text{ br}$, $|MN| = 3 \text{ br}$

Şekilde verilenlere göre $\frac{|NA|}{|NC|}$ oranı kaçtır?

A) $\frac{3}{7}$

B) $\frac{15}{7}$

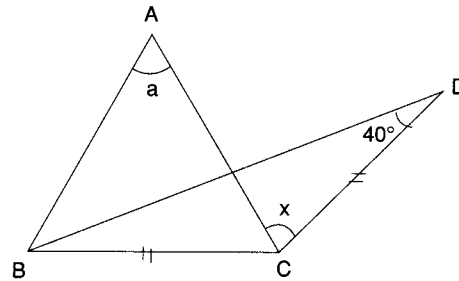
C) $\frac{17}{6}$

D) $\frac{15}{4}$

E) $\frac{21}{4}$

(1995 - II)

4)



$m(\widehat{BAC}) = a^\circ$, $m(\widehat{ACD}) = x^\circ$,

$m(\widehat{BDC}) = 40^\circ$, $|BC| = |CD|$

Yukarıdaki şekilde $|AB| = |AC|$ olduğuna göre,

x in a türünden değeri aşağıdakilerden hangisidir?

A) $a + 10$

B) $a + 40$

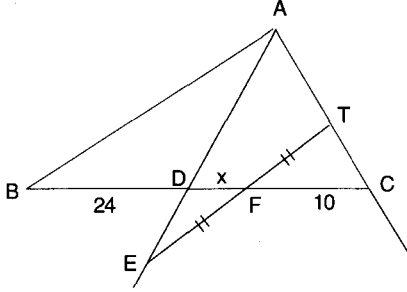
C) $2a - 40$

D) $\frac{a}{2} + 40$

E) $\frac{a}{2} + 10$

(1996 - II)

5)



$$|EF| = |FT|,$$

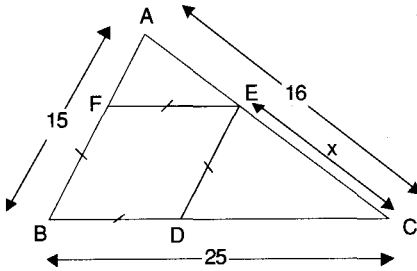
$$|FC| = 10 \text{ cm}, |BD| = 24 \text{ cm}$$

$$|DF| = x \text{ cm}$$

Yukarıdaki şekilde $[AB] \parallel [TE]$ olduğuna göre,
 $|DF| = x$ kaç cm olabilir?

- A) 4 B) 6 C) 8 D) 10 E) 12
(1996 - I)

6)



ABC bir üçgen

BDEF bir eşkenar dörtgen

$$|AB| = 15 \text{ cm}, |AC| = 16 \text{ cm},$$

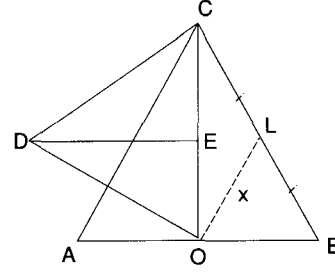
$$|BC| = 25 \text{ cm}, |EC| = x \text{ cm}$$

Yukarıda verilenlere göre,

$$|EC| = x \text{ kaç cm dir?}$$

- A) 6 B) 8 C) 9 D) 10 E) 12
(1996 - II)

7)

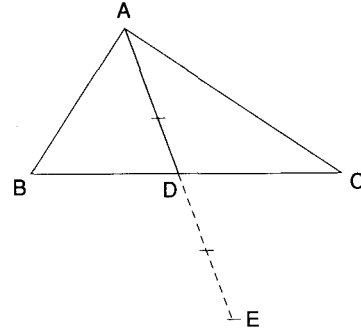


$$|CL| = |LB|, |AO| = |OB|$$

Yukarıdaki şekilde ABC ve DOC eşkenar
üçgenler, $[DE] \parallel [AB]$ ve
 $|DE| = 8 \text{ cm}$ olduğuna göre,
 $|OL| = x$ kaç cm dir?

- A) $\frac{16}{3}$ B) $\frac{28}{3}$ C) 10
D) 12 E) 14
(1996 - I)

8)



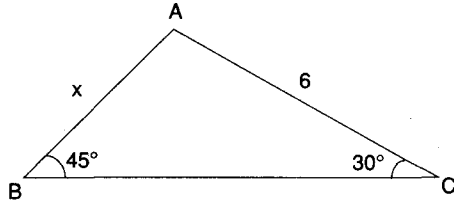
A, D, E doğrusal

$$|AD| = |DE|$$

Yukarıdaki şekle göre $|AC|$ kenar uzunluğu,
 $|AD|$ kenarortay uzunluğu ve A açısının ölçüsü
verilen ABC üçgenini çizmek için aşağıdaki
yardımcı üçgenlerden hangisini çizmek gere-
kir?

- A) ACD B) ABD C) ACE
D) BED E) CDE
(1996 - II)

9)



ABC bir üçgen

$$m(\widehat{ABC}) = 45^\circ, m(\widehat{BCA}) = 30^\circ$$

$$|AC| = 6 \text{ cm}, |AB| = x \text{ cm}$$

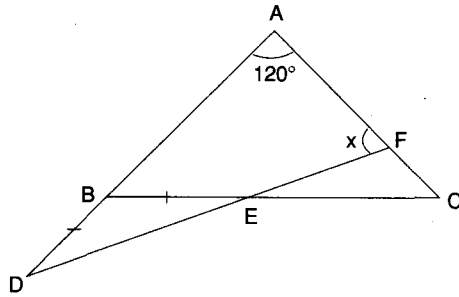
Yukarıdaki verilene göre,

$|AB| = x$ kaç cm dir?

- A) $3\sqrt{3}$ B) $2\sqrt{3}$ C) $\sqrt{3}$
D) $3\sqrt{2}$ E) $2\sqrt{2}$

(1996 - II)

10)



$$m(\widehat{BAC}) = 120^\circ$$

$$|BA| = |AC|, |DB| = |BE|$$

$$m(\widehat{AFD}) = x$$

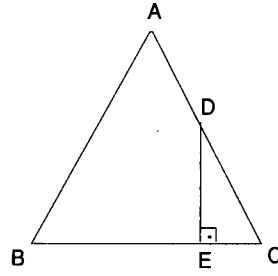
Yukarıdaki şekilde $|AB| = |AC|$ olduğuna göre,

$m(\widehat{AFD}) = x$ kaç derecedir?

- A) 30 B) 35 C) 40
D) 45 E) 50

(1997 - I)

11)



ABC bir eşkenar üçgen

$$[DE] \perp [BC]$$

Şekildeki ABC eşkenar üçgeninde

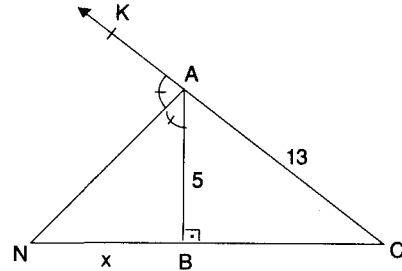
$$\frac{|DC|}{|DA|} = \frac{2}{3} \text{ olduğuna göre}$$

$$\frac{|EB|}{|EC|} \text{ oranı kaçtır?}$$

- A) $\frac{3}{2}$ B) $\frac{7}{2}$ C) 4 D) 5 E) 6

(1997 - I)

12)



ABC bir diküçgen $m(\widehat{ABC}) = 90^\circ$

$[AN]$, $\widehat{BAK}$ açısının açıortayı

$$|AC| = 13, |AB| = 5 \text{ cm}, |NB| = x$$

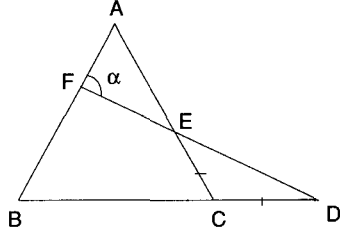
Yukarıda verilene göre,

$|NB| = x$ kaç cm dir?

- A) $\frac{15}{2}$ B) $\frac{17}{2}$ C) 4
D) 5 E) 6

(1997 - II)

13)



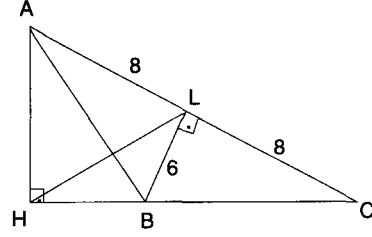
Yukarıdaki şekilde ABC bir eşkenar üçgen olduğuna göre ,

$m(\widehat{AFE}) = \alpha$ kaç derecedir?

- A) 110 B) 105 C) 100 D) 95 E) 90
(1997 - II)

KAVRAM YAYINLARI

15)



$m(\widehat{AHC}) = 90^\circ$, $m(\widehat{BLC}) = 90^\circ$

$|AL| = |LC| = 8$ cm

$|LB| = 6$ cm

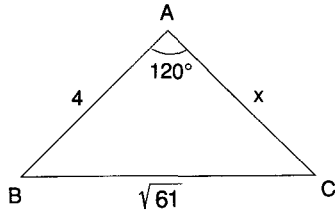
Yukarıdaki verilere göre ,

$\frac{|AH|}{|HL|}$ oranı kaçtır?

- A) $\frac{1}{3}$ B) $\frac{3}{4}$ C) $\frac{3}{5}$ D) $\frac{6}{5}$ E) $\frac{8}{5}$

(1997 - II)

14)



ABC bir üçgen

$m(\widehat{BAC}) = 120^\circ$

$|AB| = 4$ cm , $|BC| = \sqrt{61}$ cm

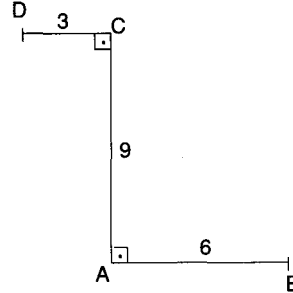
Yukarıdaki verilere göre,

$|AC| = x$ kaç cm dir?

- A) 5 B) 6 C) 7 D) 8 E) 9
(1997 - II)

KAVRAM YAYINLARI

16)



$m(\widehat{DCA}) = 90^\circ$, $m(\widehat{CAB}) = 90^\circ$

$|DC| = 3$ cm , $|AB| = 6$ cm , $|AC| = 9$ cm

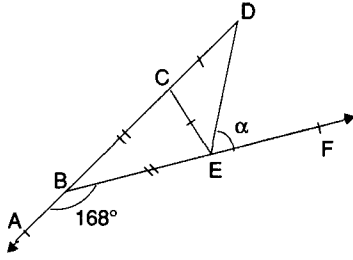
Yukarıda verilenlere göre

$|DB|$ kaç cm dir?

- A) 6 B) 9 C) $6\sqrt{2}$ D) $9\sqrt{2}$ E) $10\sqrt{2}$

(1998 - II)

17)



A, B, C, D doğrusal , B, E, F doğrusal

$$|BC| = |BE| , |CD| = |CE|$$

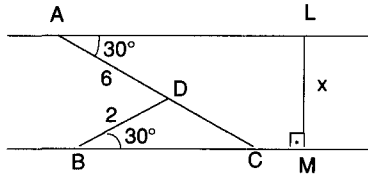
$$m(\widehat{ABF}) = 168^\circ , m(\widehat{DEF}) = \alpha$$

Yukarıdaki verilere göre

$$m(\widehat{DEF}) = \alpha \text{ kaç derecedir?}$$

- A) 50 B) 54 C) 58 D) 60 E) 64
(1999 ÖSS - İptal edilen)

18)



AL // BM , [LM] ⊥ BM

$$m(\widehat{LAD}) = 30^\circ , m(\widehat{DBC}) = 30^\circ$$

$$|AD| = 6 \text{ cm ,}$$

$$|BD| = 2 \text{ cm ,}$$

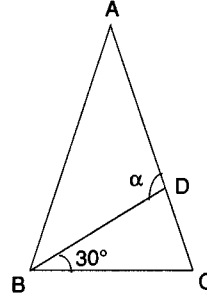
$$|LM| = x \text{ cm}$$

Yukarıdaki verilere göre

$$|LM| = x \text{ kaç cm dir?}$$

- A) 8 B) 6 C) 5 D) 4 E) 3
(1999 - ÖSS)

19)



$$m(\widehat{DBC}) = 30^\circ$$

$$m(\widehat{ADB}) = \alpha$$

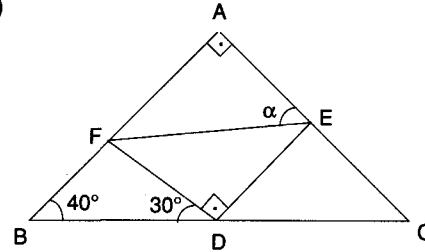
Yukarıdaki şekilde ABC ve ABD birer ikizkenar üçgendir.

|AB| = |AC| ve |AD| = |BD| olduğuna göre,

$$m(\widehat{ADB}) = \alpha \text{ kaç derecedir?}$$

- A) 95 B) 100 C) 105 D) 110 E) 115
(1999 - ÖSS)

20)



$$m(\widehat{BAC}) = 90^\circ , m(\widehat{FDE}) = 90^\circ , m(\widehat{ABC}) = 40^\circ$$

$$m(\widehat{BDF}) = 30^\circ , m(\widehat{AEF}) = \alpha$$

Yukarıdaki şekilde, DEF diküçgeninin köşeleri ABC diküçgeninin kenarları üzerindedir.

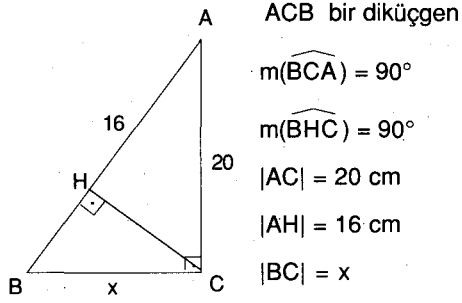
ABC üçgeni DEF üçgenine benzer

(ABC ~ DEF) olduğuna göre,

$$m(\widehat{AEF}) = \alpha \text{ kaç derecedir?}$$

- A) 50 B) 70 C) 75 D) 80 E) 85
(1999 - ÖSS)

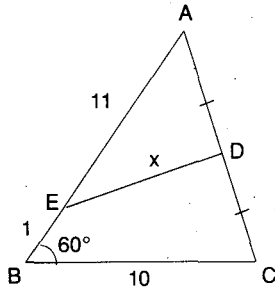
21)



Yukarıdaki verilere göre,
 $|BC| = x$ kaç cm dir?

- A) 9 B) 12 C) 15 D) 16 E) 18
 (1999 ÖSS - İptal edilen)

22)



ABC bir üçgen $|AD| = |DC|$, $m(\widehat{ABC}) = 60^\circ$
 $|BC| = 10 \text{ cm}$, $|AE| = 11 \text{ cm}$,
 $|BE| = 1 \text{ cm}$, $|DE| = x$
 Yukarıdaki verilere göre,
 $|DE| = x$ kaç cm dir?

- A) $5\sqrt{3}$ B) $6\sqrt{3}$ C) $7\sqrt{3}$
 D) 3 E) 4

(1999 ÖSS - İptal edilen)

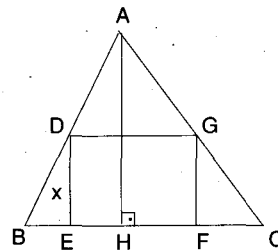
23) 16 m uzunluğundaki bir merdiven yer ile 45° lik açı yapacak şekilde, yere dik bir duvara dayandırılıyor.

Buna göre, merdiven ayağının duvara olan uzaklığı kaç m dir?

- A) $4\sqrt{2}$ B) $6\sqrt{2}$ C) $7\sqrt{2}$
 D) $8\sqrt{2}$ E) $10\sqrt{2}$

(1999 ÖSS - İptal edilen)

24)

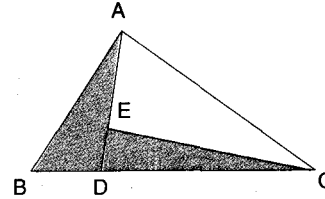


ABC bir üçgen
 DEFG bir kare
 $[AH] \perp [BC]$
 $|DE| = x$

DEFG karesinin köşeleri, şekildeki gibi ABC üçgeninin kenarları üzerindedir.
 $|AH| = 8 \text{ cm}$ ve $|BC| = 12 \text{ cm}$ olduğuna göre,
 $|DE| = x$ kaç cm dir?

- A) 4,3 B) 4,4 C) 4,5 D) 4,6 E) 4,8
 (1999 - ÖSS)

25)

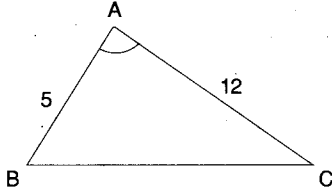


Yukarıdaki ABC üçgeninde
 $|BC| = 6$, $|BD|$ ve $|AD| = 5$, $|ED|$ dir.
 Buna göre, taralı ABCE dörtgeninin alanının
 ABC üçgeninin alanına oranı kaçtır?

- A) $\frac{1}{3}$ B) $\frac{2}{3}$ C) $\frac{1}{4}$ D) $\frac{3}{4}$ E) $\frac{1}{5}$

(1999 ÖSS - İptal edilen)

26)



$|AB| = 5 \text{ cm}$
 $|AC| = 12 \text{ cm}$

Şekildeki ABC üçgeninde $m(\widehat{BAC}) > 90^\circ$ olduğuna göre $|BC|$ nin en küçük tamsayı değeri kaçtır?

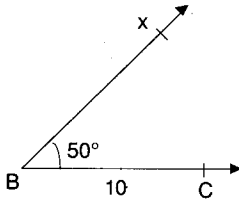
- A) 13 B) 14 C) 15 D) 16 E) 17
(ÖSS - 2000)

27) $|BC| = 10 \text{ cm}$

$m(\widehat{ABC}) = 50^\circ$

$|AC| = 7 \text{ cm}$

olan ABC üçgeni aşağıdaki şekil tamamlanarak çizilecektir.

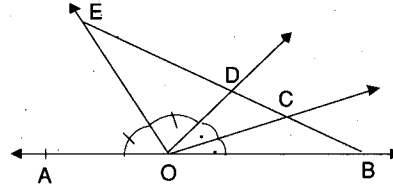


Buna göre, üçgenin A köşesi [Bx ışını ile aşağıdakilerden hangisinin kesim noktasıdır?

- A) $|BC|$ nin kenar orta dikmesi
B) $|BC|$ kenarına 7 cm uzaklıkla bir paralel doğru
C) Merkezi $|BC|$ nin orta noktası, yarıçapı 7 cm olan çember
D) Merkezi B, yarıçapı 7 cm olan çember
E) Merkezi C, yarıçapı 7 cm olan çember

(ÖSS - 2000)

28)



A, O, B noktaları doğrusal

$[OC, DOB]$ açısının açıortayı

$[OE, AOD]$ açısının açıortayı

Yukarıdaki şekilde $|OC| = 3 \text{ cm}$,

$|OE| = 4 \text{ cm}$ ve

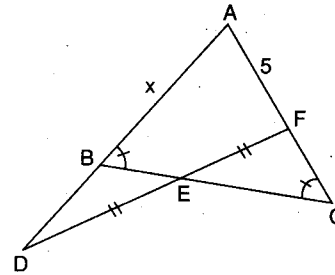
$|EB| = 7 \text{ cm}$ olduğuna göre,

$|CB|$ kaç cm dir?

- A) $\frac{1}{2}$ B) $\frac{3}{2}$ C) 2 D) 3 E) 4

(ÖSS - 2000)

29)



ABC bir ikizkenar üçgen $m(\widehat{ABC}) = m(\widehat{ACB})$

D noktası AB doğrusu üzerinde

$|DE| = |EF|$, $|AF| = 5 \text{ cm}$, $|AB| = x$

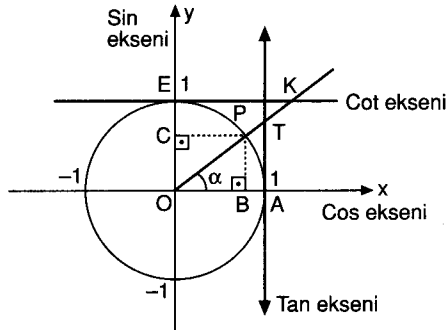
Yukarıdaki şekilde $|AD| = 9 \text{ cm}$ olduğuna göre,

x kaç cm dir?

- A) 6 B) 7 C) 8 D) $2\sqrt{6}$ E) $2\sqrt{14}$

(ÖSS - 2005)

TANIM



- a)** $\sin \alpha = |\text{PB}| = |\text{OC}|$ (P'nin ordinatı)
- b)** $\cos \alpha = |\text{OB}|$ (P'nin apsisi)
- c)** $\tan \alpha = |\text{TA}|$ (T'nin ordinatı)
- d)** $\cot \alpha = |\text{KE}|$ (K'nin apsisi)

TEMEL BAĞINTILAR

* $\cos^2 \alpha + \sin^2 \alpha = 1$

$$\star \tan \alpha = \frac{\sin \alpha}{\cos \alpha}$$

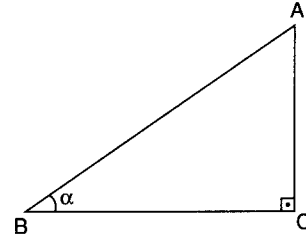
$$* \cot \alpha = \frac{\cos \alpha}{\sin \alpha}$$

$$* \tan \alpha = \frac{1}{\cot \alpha}$$

$$\star \sec \alpha = \frac{1}{\cos \alpha}$$

$$\star \operatorname{cosec} \alpha = \frac{1}{\sin \alpha}$$

DİKÜÇGENDE TRİGONOMETRİK ORANLAR



ABC üçgeni dik üçgen ise

$$\sin \alpha = \frac{|AC|}{|AB|} \qquad \tan \alpha = \frac{|AC|}{|BC|}$$

$$\cos \alpha = \frac{|BC|}{|AB|} \qquad \cot \alpha = \frac{|BC|}{|AC|}$$

ÖNEMLİ TRİGONOMETRİK ORANLAR

α	0	30° $\frac{\pi}{6}$	45° $\frac{\pi}{4}$	60° $\frac{\pi}{3}$	90° $\frac{\pi}{2}$	180° π	270° $\frac{3\pi}{2}$	360° 2π
sin	0	$\frac{1}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{\sqrt{3}}{2}$	1	0	-1	0
cos	1	$\frac{\sqrt{3}}{2}$	$\frac{\sqrt{2}}{2}$	$\frac{1}{2}$	0	-1	0	1
tan	0	$\frac{\sqrt{3}}{3}$	1	$\sqrt{3}$	∞	0	$-\infty$	0
cot	∞	$\sqrt{3}$	1	$\frac{\sqrt{3}}{3}$	0	$-\infty$	0	∞

BÖLGELERE GÖRE TRİGONOMETRİK ÖZDEŞLİKLER

a) I. BÖLGE

α ve $\frac{\pi}{2} - \alpha$ için

$$\sin\left(\frac{\pi}{2} - \alpha\right) = \cos\alpha$$

$$\cos(\frac{\pi}{2} - \alpha) = \sin\alpha$$

$$\tan\left(\frac{\pi}{2} - \alpha\right) = \cot\alpha$$

$$\cot\left(\frac{\pi}{2} - \alpha\right) = \tan\alpha$$

b) II. BÖLGE

α ve $\frac{\pi}{2} + \alpha$ için

$$\sin\left(\frac{\pi}{2} + \alpha\right) = \cos\alpha$$

$$\cos\left(\frac{\pi}{2} + \alpha\right) = -\sin\alpha$$

$$\tan\left(\frac{\pi}{2} + \alpha\right) = -\cot\alpha$$

$$\cot\left(\frac{\pi}{2} + \alpha\right) = -\tan\alpha$$

★ α ve $\pi - \alpha$ için

$$\sin(\pi - \alpha) = \sin\alpha$$

$$\cos(\pi - \alpha) = -\cos\alpha$$

$$\tan(\pi - \alpha) = -\tan\alpha$$

$$\cot(\pi - \alpha) = -\cot\alpha$$

c) III. BÖLGE

α ve $\pi + \alpha$ için

$$\sin(\pi + \alpha) = -\sin\alpha$$

$$\cos(\pi + \alpha) = -\cos\alpha$$

$$\tan(\pi + \alpha) = \tan\alpha$$

$$\cot(\pi + \alpha) = \cot\alpha$$

★ α ve $\frac{3\pi}{2} - \alpha$ için

$$\sin\left(\frac{3\pi}{2} - \alpha\right) = -\cos\alpha$$

$$\cos\left(\frac{3\pi}{2} - \alpha\right) = -\sin\alpha$$

$$\tan\left(\frac{3\pi}{2} - \alpha\right) = \cot\alpha$$

$$\cot\left(\frac{3\pi}{2} - \alpha\right) = \tan\alpha$$

d) IV. BÖLGE

α ve $\frac{3\pi}{2} + \alpha$ için

$$\sin\left(\frac{3\pi}{2} + \alpha\right) = -\cos\alpha$$

$$\cos\left(\frac{3\pi}{2} + \alpha\right) = \sin\alpha$$

$$\tan\left(\frac{3\pi}{2} + \alpha\right) = -\cot\alpha$$

$$\cot\left(\frac{3\pi}{2} + \alpha\right) = -\tan\alpha$$

★ α , $2\pi - \alpha$ ve $-\alpha$ için

$$\sin(2\pi - \alpha) = \sin(-\alpha) = -\sin\alpha$$

$$\cos(2\pi - \alpha) = \cos(-\alpha) = \cos\alpha$$

$$\tan(2\pi - \alpha) = \tan(-\alpha) = -\tan\alpha$$

$$\cot(2\pi - \alpha) = \cot(-\alpha) = -\cot\alpha$$

TOPLAM VE FARK FORMÜLLERİ

$$\star \sin(a \pm b) = \sin a \cdot \cos b \pm \cos a \cdot \sin b$$

$$\star \cos(a \pm b) = \cos a \cdot \cos b \mp \sin a \cdot \sin b$$

$$\star \tan(a \pm b) = \frac{\tan a \pm \tan b}{1 \mp \tan a \cdot \tan b}$$

$$\star \cot(a + b) = \frac{\cot a \cdot \cot b - 1}{\cot a + \cot b}$$

$$\star \cot(a - b) = \frac{-(\cot a \cdot \cot b + 1)}{\cot a - \cot b}$$

YARIM AÇI FORMÜLLERİ

$$\star \sin 2a = 2 \sin a \cdot \cos a$$

$$\begin{aligned} \star \cos 2a &= \cos^2 a - \sin^2 a \\ &= 2\cos^2 a - 1 \\ &= 1 - 2\sin^2 a \end{aligned}$$

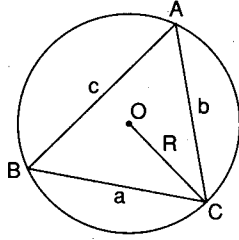
$$\star \tan 2a = \frac{2 \tan a}{1 - \tan^2 a}$$

$$\star \cot 2a = \frac{\cot^2 a - 1}{2 \cot a}$$

KAVRAM YAYINLARI

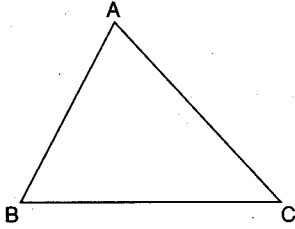
KAVRAM YAYINLARI

SİNÜS TEOREMİ



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} = 2R$$

COSİNÜS TEOREMİ



$$a^2 = b^2 + c^2 - 2bc \cdot \cos A$$

$$b^2 = a^2 + c^2 - 2ac \cdot \cos B$$

$$c^2 = a^2 + b^2 - 2ab \cdot \cos C$$

DÖNÜŞÜM FORMÜLLERİ

$$\star \sin a + \sin b = 2 \cdot \sin \frac{a+b}{2} \cdot \cos \frac{a-b}{2}$$

$$\star \sin a - \sin b = 2 \cdot \cos \frac{a+b}{2} \cdot \sin \frac{a-b}{2}$$

$$\star \cos a + \cos b = 2 \cdot \cos \frac{a+b}{2} \cdot \cos \frac{a-b}{2}$$

$$\star \cos a - \cos b = -2 \cdot \sin \frac{a+b}{2} \cdot \sin \frac{a-b}{2}$$

$$\star \tan a \pm \tan b = \frac{\sin(a \pm b)}{\cos a \cdot \cos b}$$

$$\star \cot a \pm \cot b = \frac{\sin(a \pm b)}{\sin a \cdot \sin b}$$

TERS DÖNÜŞÜM FORMÜLLERİ

$$\star \sin a \cdot \sin b = -\frac{1}{2} [\cos(a+b) - \cos(a-b)]$$

$$\star \cos a \cdot \cos b = \frac{1}{2} [\cos(a+b) + \cos(a-b)]$$

$$\star \sin a \cdot \cos b = \frac{1}{2} [\sin(a+b) + \sin(a-b)]$$

TRİGONOMETRİK DENKLEMLER

a) $\sin x = a$ denkleminin çözüm kümesi

i) $a > 1$ ve $a < -1$ için $\emptyset$

ii) $|a| \leq 1$ için

$a = \sin \alpha$ ise

$$\sin x = \sin \alpha \Rightarrow x_1 = \alpha + 2k\pi \quad (\sin x = \sin(\pi - x))$$

$$x_2 = (\pi - \alpha) + 2k\pi$$

$$\emptyset = \{x | x = \alpha + 2k\pi \vee x = (\pi - \alpha) + 2k\pi \quad k \in \mathbb{Z}\}$$

b) $\cos x = a$ denkleminin çözüm kümesi

i) $a > 1$ ve $a < -1$ için $\emptyset$

ii) $|a| \leq 1$ için

$a = \cos \alpha$ ise

$$\cos x = \cos \alpha \Rightarrow x_1 = \alpha + 2k\pi \quad (\cos x = \cos(-x))$$

$$x_2 = -\alpha + 2k\pi$$

$$\emptyset = \{x | x = \alpha + 2k\pi \vee x = (2\pi - \alpha) + 2k\pi \quad k \in \mathbb{Z}\}$$

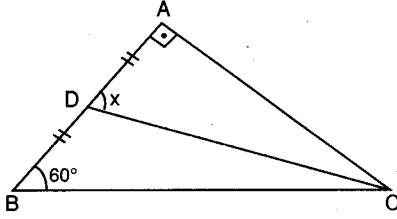
c) $\tan x = a$ denkleminin çözüm kümesi

$a = \tan \alpha$ ise

$$\tan x = \tan \alpha \Rightarrow x = \alpha + k\pi$$

$$\emptyset = \{x | x = \alpha + k\pi, \quad k \in \mathbb{Z}\}$$

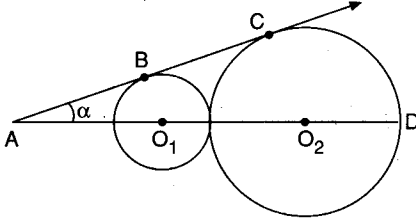
1)



Şekildeki ABC diküçgeninde $m(\widehat{ABC}) = 60^\circ$,
 $|AD| = |DB|$ ve $m(\widehat{ADC}) = x$ ise
 $\tan x$ kaçtır?

- A) $\sqrt{3}$ B) $2\sqrt{3}$ C) $3\sqrt{3}$ D) $4\sqrt{3}$ E) $6\sqrt{3}$

2)

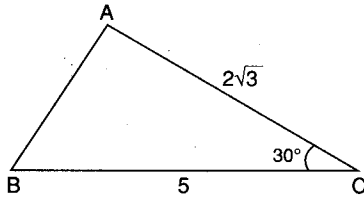


Şekilde O_1 ve O_2 merkezli r_1, r_2 yarıçaplı
çemberler dıştan teğet ve $[BC]$ ortak dış teğet
doğrusudur.

$\frac{r_1}{r_2} = \frac{1}{2}$ ise $\tan \alpha$ kaçtır?

- A) $\frac{1}{2}$ B) $\frac{2}{3}$ C) $\frac{\sqrt{2}}{2}$ D) $\frac{\sqrt{2}}{4}$ E) $\frac{\sqrt{3}}{3}$

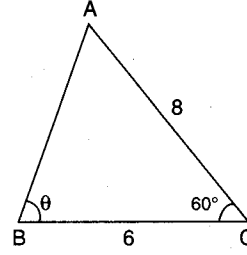
3)



Şekildeki ABC üçgeninde $m(\widehat{BCA}) = 30^\circ$,
 $|AC| = 2\sqrt{3}$ br ve $|BC| = 5$ br ise
 $\tan(\widehat{ABC})$ kaçtır?

- A) $\sqrt{3}$ B) $\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{3}}{3}$ D) $\frac{1}{2}$ E) $\frac{1}{3}$

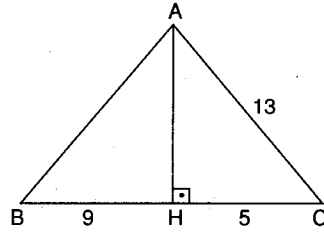
4)



Şekildeki ABC üçgeninde $m(\widehat{ACB}) = 60^\circ$,
 $m(\widehat{ABC}) = \theta$, $|AC| = 8$ br ve $|BC| = 6$ br ise
 $\cot \theta$ kaçtır?

- A) $\sqrt{3}$ B) $\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{3}}{3}$ D) $\frac{\sqrt{3}}{6}$ E) $\frac{\sqrt{3}}{9}$

5)



Şekildeki ABC üçgeninde, $[AH] \perp [BC]$,
 $|AC| = 13$ br, $|BH| = 9$ br ve
 $|HC| = 5$ br ise $\sin(\widehat{ABC})$ kaçtır?

- A) $\frac{5}{12}$ B) $\frac{4}{13}$ C) $\frac{3}{5}$ D) $\frac{4}{5}$ E) $\frac{5}{6}$

6) $\cos 40^\circ = a$ ise $\sin 110^\circ$ nin a türünden
eşiti aşağıdakilerden hangisidir?

- A) $\sqrt{\frac{1-a}{2}}$ B) $\frac{a+1}{2}$ C) $\sqrt{\frac{a+1}{2}}$
D) $a^2 - 1$ E) $\frac{a^2 + 1}{2}$

KAVRAM YAYINLARI

KAVRAM YAYINLARI

7) $0^\circ < \theta < 90^\circ$ olmak üzere ,

$$\cot \theta = \frac{4}{3} \text{ ise}$$

$\frac{\sin \theta + \cos \theta}{7 \tan \theta}$ işleminin sonucu kaçtır?

- A) $\frac{3}{20}$ B) $\frac{1}{5}$ C) $\frac{1}{4}$
D) $\frac{4}{15}$ E) $\frac{5}{12}$

8) $\frac{\pi}{2} < x < \pi$ olmak üzere ,

$$\sin x = \frac{8}{17} \text{ ise}$$

$\tan x \cdot \operatorname{cosec} x - 2 \tan x$ işleminin sonucu kaçtır?

- A) $-\frac{8}{15}$ B) $-\frac{1}{15}$ C) 0
D) $\frac{8}{15}$ E) $\frac{15}{17}$

9) $0 < x < \frac{\pi}{2}$ olmak üzere

$$\cos x = \frac{8}{17} \text{ ise}$$

$\tan x \cdot \cos x + \sin x$ işleminin sonucu kaçtır?

- A) $\frac{30}{17}$ B) $\frac{17}{15}$ C) $\frac{15}{17}$
D) $\frac{8}{15}$ E) $\frac{7}{15}$

10) $\cos\left(\frac{172\pi}{3}\right) + \sin\left(-\frac{73\pi}{6}\right) = A$ ise A kaçtır?

- A) -1 B) $-\frac{1}{2}$ C) 0 D) $\frac{1}{2}$ E) 1

11) $0 < A < \frac{\pi}{2}$ olmak üzere $\frac{1}{\cos^2 A} - \frac{1}{\cot^2 A}$

ifadesinin değeri aşağıdakilerden hangisine eşittir?

- A) -1 B) 0 C) 1 D) $\cos A$ E) $\sin A$

12) $0 < a < \frac{\pi}{2}$ olmak üzere

$$\frac{\sin a + 2 \cos a}{3 \sin a - \cos a} = \frac{1}{2} \text{ ise}$$

$\sin^2 a$ kaçtır?

- A) $\frac{1}{5}$ B) $\frac{5}{\sqrt{26}}$ C) $\frac{1}{2\sqrt{6}}$
D) $\frac{25}{26}$ E) $\frac{5}{26}$

13) $\tan 10^\circ = a$ ise

$$\frac{\tan 10^\circ - \cot 100^\circ}{\cos 240^\circ} \text{ ifadesinin eşiti}$$

aşağıdakilerden hangisidir?

- A) -4a B) -2a C) $\frac{a}{2}$ D) $\frac{a}{3}$ E) $\frac{a}{4}$

14) $\frac{2 - 2 \sin^2 x}{\cos^2 x}$ ifadesinin sonucu kaçtır?

- A) $\frac{1}{4}$ B) $\frac{1}{2}$ C) 1 D) 2 E) 4

KAVRAM YAYINLARI

KAVRAM YAYINLARI



- 1) $0^\circ < x < 90^\circ$ olmak üzere ,

$\tan x = 3$ ise

$\cos 2x + \sin 2x + 1$ ifadesinin değeri kaçtır?

- A) $\frac{3}{4}$ B) $\frac{4}{5}$ C) 1 D) $\frac{5}{4}$ E) $\frac{5}{3}$

- 2) $\left(\frac{\sin 15^\circ - \cos 15^\circ}{\sin 15^\circ + \cos 15^\circ} \right)^2$ ifadesinin sonucu kaçtır?

- A) $\frac{1}{16}$ B) $\frac{1}{9}$ C) $\frac{1}{3}$
D) $\frac{1}{2}$ E) 4

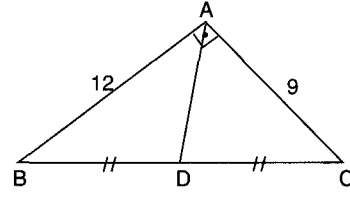
- 3) $\sin 12^\circ = x$ ve $\cos 39^\circ = y$ ise y nin x cinsinden eşiti aşağıdakilerden hangisi olabilir?

- A) $\sqrt{\frac{x-1}{2}}$ B) $\sqrt{\frac{x+1}{2}}$ C) $\sqrt{\frac{x}{2}}$
D) $\frac{\sqrt{x}}{2}$ E) $\sqrt{x+1}$

- 4) $(1 + \sin 54^\circ) : (1 - \cos 36^\circ)$ işleminin sonucu aşağıdakilerden hangisine eşittir?

- A) $\tan 18$ B) $\cot 18$ C) $\cot^2 18$
D) $\tan^2 18$ E) $\operatorname{cosec} 18$

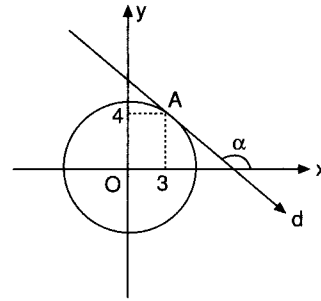
- 5)



Şekildeki ABC üçgeninde $m(\widehat{BAC}) = 90^\circ$,
 $|BD| = |DC|$, $|AB| = 12$ br ve
 $|AC| = 9$ br ise $\sin(\widehat{ADC})$ kaçtır?

- A) $\frac{22}{25}$ B) $\frac{23}{25}$ C) $\frac{24}{25}$ D) $\frac{23}{75}$ E) $\frac{49}{75}$

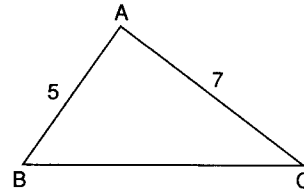
- 6)



Şekildeki dik koordinat düzleminde d doğrusu A(3, 4) noktasında O merkezli çembere teğettir. d doğrusunun eğim açısı α ise $\sin 2\alpha$ kaçtır?

- A) $-\frac{24}{25}$ B) $-\frac{15}{17}$ C) $\frac{7}{24}$ D) $\frac{24}{25}$ E) $\frac{7}{25}$

- 7)



Şekildeki ABC üçgeninde ,
 $|AB| = 5$ br ve $|AC| = 7$ br ise

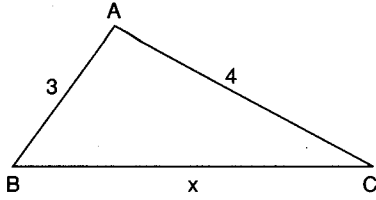
$\frac{\sin B}{\sin C}$ kaçtır?

- A) $\frac{5}{7}$ B) $\frac{7}{12}$ C) $\frac{7}{5}$ D) $\frac{13}{12}$ E) $\frac{12}{5}$

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8)



Şekildeki ABC üçgeninde $m(\widehat{BAC}) > 90^\circ$,
 $\sin(\widehat{BAC}) = \frac{\sqrt{5}}{3}$, $|AB| = 3$ br ve
 $|AC| = 4$ br ise $|BC| = x$ kaç br dir?

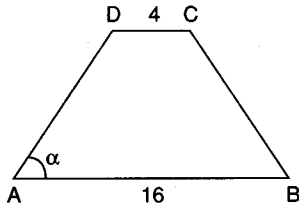
- A) $4\sqrt{2}$ B) 6 C) $\sqrt{41}$ D) $3\sqrt{5}$ E) $4\sqrt{3}$

9) Bir ABC üçgeninde $m(\widehat{A}) = 45^\circ$ ve

$m(\widehat{C}) = 120^\circ$ ise $\frac{|BC|}{|AB|}$ kaçtır?

- A) $\frac{\sqrt{6}}{3}$ B) $\frac{\sqrt{6}}{4}$ C) $\frac{\sqrt{3}}{3}$ D) $\frac{\sqrt{2}}{2}$ E) $\frac{\sqrt{6}}{2}$

10)



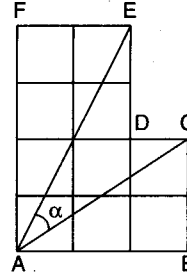
Şekilde ABCD ikizkenar yamuğu teğetler
dörtgeni, $|DC| = 4$ br, $|AB| = 16$ br ve
 $m(\widehat{DAB}) = \alpha$ ise $\sin 2\alpha$ kaçtır?

- A) $\frac{23}{25}$ B) $\frac{25}{27}$ C) $\frac{15}{16}$ D) $\frac{24}{25}$ E) $\frac{26}{27}$

11) $\frac{\sin^2 75^\circ - \cos^2 75^\circ}{\cos 15^\circ \cdot \sin 15^\circ}$ ifadesinin değeri kaçtır?

- A) $\sqrt{2}$ B) $\sqrt{3}$ C) 2
D) $2\sqrt{2}$ E) $2\sqrt{3}$

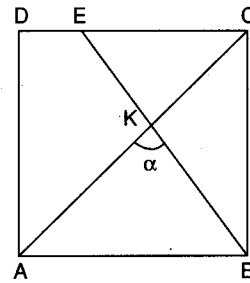
12)



Şekilde ABCDEF 10 tane
eş kareden oluşmuştur.
 $m(\widehat{EAC}) = \alpha$ ise
 $\tan \alpha$ kaçtır?

- A) $\frac{5}{7}$ B) $\frac{4}{7}$ C) $\frac{1}{7}$ D) $\frac{1}{14}$ E) $\frac{1}{30}$

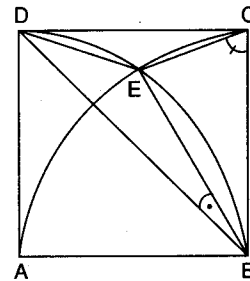
13)



Şekilde ABCD kare, $m(\widehat{AKB}) = \alpha$ ve
 $3|DE| = |EC|$ ise $\tan \alpha$ kaçtır?

- A) 2 B) 3 C) 4 D) 6 E) 7

14)



Şekildeki ABCD karesinde A ve B merkezli iki
çeyrek çember E noktasında kesişmektedir.
 $\sin(\widehat{EBD}) + \sin(\widehat{ECB})$ işleminin sonucu
kaçtır?

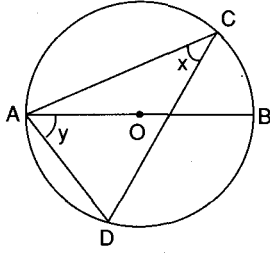
- A) $\frac{\sqrt{6}}{3}$ B) $\frac{\sqrt{6}}{2}$ C) $\frac{\sqrt{3}}{4}$ D) $\sqrt{2}$ E) $\sqrt{3}$

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1)



Şekildeki O merkezli [AB] çaplı çemberde

$\sin x = \frac{\sqrt{3}}{4}$ ise $\cos(\pi + 2y)$ kaçtır?

- A) $-\frac{5}{8}$ B) $-\frac{1}{4}$ C) $\frac{1}{4}$ D) $\frac{1}{2}$ E) $\frac{5}{8}$

2) $\tan(45 - x) = -\frac{1}{3}$ ise $\tan x$ kaçtır?

- A) 2 B) 1 C) $\frac{\sqrt{2}}{2}$ D) $\frac{1}{2}$ E) $\frac{1}{3}$

3) $\tan 65^\circ = a$ ise

$\frac{\cos 100^\circ + \sin 140^\circ}{\cos 105^\circ}$ ifadesinin a türünden

eşiti aşağıdakilerden hangisidir?

- A) $\frac{-a}{\sqrt{a^2 + 1}}$ B) $\frac{-2a}{\sqrt{a^2 + 1}}$ C) $\frac{1}{\sqrt{a^2 + 1}}$
D) $\frac{a}{\sqrt{a^2 + 1}}$ E) $\frac{2a}{\sqrt{a^2 + 1}}$

4) $\frac{\cos 70^\circ \cdot \cos 20^\circ}{\cos 50^\circ}$ işleminin sonucu

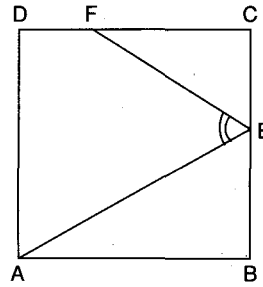
aşağıdakilerden hangisidir?

- A) 2 B) 1 C) $\cos 80$ D) $\frac{1}{2}$ E) $\sin 80$

5) $\frac{\sqrt{3}}{3\sin 15^\circ} + \frac{1}{\cos 15^\circ}$ işleminin sonucu kaçtır?

- A) $\frac{4\sqrt{6}}{3}$ B) $\frac{2\sqrt{3}}{3}$ C) $\frac{3}{2}$
D) $2\sqrt{2}$ E) $6\sqrt{2}$

6)



Şekildeki ABCD karesinde

$|CF| = 4|DF|$ ve $3|CE| = 2|BE|$ ise

$\tan(\angle AEF)$ kaçtır?

- A) -13 B) $-\frac{11}{7}$ C) $\frac{7}{11}$ D) $\frac{11}{7}$ E) 13

7) $\frac{\cos 110^\circ + \cos 10^\circ}{\sin 20^\circ \cdot \sin 70^\circ}$ ifadesinin sonucu kaçtır?

- A) -2 B) -1 C) $-\frac{1}{2}$ D) 1 E) 2

8) $\frac{1}{\sin 18^\circ} - \frac{1}{\sin 54^\circ}$ ifadesinin sonucu kaçtır?

- A) -2 B) -1 C) 0 D) 1 E) 2

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9) $\frac{1}{\cos 75^\circ} - \frac{1}{\cos 15^\circ}$ ifadesinin sonucu kaçtır?

- A) $-\frac{1}{2}$ B) $-\frac{\sqrt{2}}{2}$ C) $\frac{1}{2}$
D) $\sqrt{2}$ E) $2\sqrt{2}$

10) $\frac{\cos 4x + \cos 2x + 1}{\sin 6x + \sin 4x + \sin 2x}$ ifadesinin sadeleştirilmiş biçimi aşağıdakilerden hangisidir?

- A) $\tan 2x$ B) $\frac{1}{\cos 2x}$ C) $\frac{\operatorname{cosec} 2x}{2}$
D) $\frac{\cot 2x}{2}$ E) $\frac{\sec 2x}{2}$

11) $\frac{\sin x + \sin 7x}{\cos x + \cos 7x}$ ifadesinin sadeleştirilmiş biçimi aşağıdakilerden hangisidir?

- A) $\sin x$ B) $\tan 7x$ C) $\cot 8x$
D) $\tan 4x$ E) $\cos 7x$

12) $\alpha = \frac{\pi}{18}$ ise $\frac{\sin 8\alpha - \sin 2\alpha}{\cos 8\alpha + \cos 2\alpha}$ ifadesinin sonucu kaçtır?

- A) $\frac{\sqrt{3}}{2}$ B) $\frac{1}{2}$ C) 1 D) $\frac{\sqrt{3}}{3}$ E) $\sqrt{3}$

13) $\sin 70^\circ = k$ ise $\sin 10^\circ + \cos 40^\circ$ işleminin sonucu aşağıdakilerden hangisidir?

- A) k B) $\frac{k}{2}$ C) $k - 2$ D) $-k$ E) $-2k$

14) $\frac{1}{\cos 72^\circ} - \frac{1}{\cos 36^\circ}$ ifadesinin sonucu aşağıdakilerden hangisidir?

- A) $-\frac{1}{2}$ B) $-\frac{\sqrt{3}}{2}$ C) 2
D) $\frac{\cos 36^\circ}{2}$ E) $\sin 72^\circ$

15) $\cos 108^\circ \cdot \cos 36^\circ$ işleminin sonucu kaçtır?

- A) $\frac{1}{4}$ B) $\frac{1}{2}$ C) $-\frac{1}{2}$ D) $-\frac{1}{4}$ E) $-\frac{1}{8}$

16) $\sin 126^\circ - \sin 18^\circ$ işleminin sonucu aşağıdakilerden hangisidir?

- A) $\frac{1}{2}$ B) $-\frac{\sqrt{3}}{3}$ C) $\sin 18^\circ$
D) $\cos 18^\circ$ E) $\frac{1}{4}$

KAVRAM YAYINLARI

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- 1) $\cos(2x + 40^\circ) = \sin 3x$ eşitliğini sağlayan en küçük x açısı kaç derecedir?

A) 5 B) 8 C) 10 D) 15 E) 30

- 2) $\sin 2x - \cos x = 0$ denkleminin $[0, 2\pi]$ aralığında kaç tane kökü vardır?

A) 5 B) 4 C) 3 D) 2 E) 1

- 3) $0^\circ \leq x \leq 90^\circ$ olmak üzere $2 - \sin^2 x = 2 \cos x$ ise x kaç derecedir?

A) 0 B) 15 C) 30 D) 45 E) 60

- 4) $\frac{1 + \cos 2x}{\sin 2x} = \sqrt{3}$ denkleminin $(0, \frac{\pi}{2})$ aralığındaki kökü kaç radyandır?

A) $\frac{\pi}{8}$ B) $\frac{\pi}{6}$ C) $\frac{\pi}{4}$ D) $\frac{\pi}{3}$ E) $\frac{5\pi}{12}$

- 5) $0 < x < \frac{\pi}{2}$ olmak üzere,

$9^{3\cos x} = 81^{\frac{5}{2}\sin x}$ eşitliğini sağlayan x açısı için $\tan x$ kaçtır?

A) $\frac{2}{5}$ B) $\frac{3}{5}$ C) 1 D) $\frac{5}{4}$ E) $\frac{5}{3}$

- 6) $0 < x < \pi$ olmak üzere,

$\cos\left(2x - \frac{\pi}{6}\right) = -1$ denklemini sağlayan x açısı kaç radyandır?

A) $\frac{7\pi}{6}$ B) $\frac{5\pi}{6}$ C) $\frac{7\pi}{12}$ D) $\frac{5\pi}{12}$ E) $\frac{7\pi}{16}$

- 7) $\cot\left(\arcsin \frac{3}{5}\right)$ ifadesinin değeri aşağıdakilerden hangisidir?

A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) $\frac{3}{4}$ D) $\frac{4}{3}$ E) $\frac{3}{2}$

- 8) $0 < x < \frac{\pi}{2}$ olmak üzere

$\frac{5\sin x - 2\cos x}{\sin x + \cos x} = \frac{3}{2}$ eşitliğini sağlayan x açısı kaç radyandır?

A) $\frac{\pi}{6}$ B) $\frac{\pi}{5}$ C) $\frac{\pi}{4}$ D) $\frac{\pi}{3}$ E) $\frac{\pi}{2}$

9) $\cos x = \sin 2x$ denklemini sağlayan en küçük pozitif x değeri kaç radyandır?

- A) $\frac{\pi}{6}$ B) $\frac{\pi}{4}$ C) $\frac{\pi}{3}$ D) $\frac{3\pi}{4}$ E) $\frac{2\pi}{3}$

10) $\cos \frac{x}{2} + 2\sin \frac{x}{4} = 1$ denkleminin $[0, 2\pi]$ aralığında kaç farklı kökü vardır?

- A) 0 B) 1 C) 2 D) 3 E) 4

11) $\cos(70 - x) = \sin(130 + 3x)$ denklemini sağlayan x in en küçük pozitif değeri kaç derecedir?

- A) 5 B) $\frac{15}{2}$ C) 10 D) $\frac{45}{2}$ E) 25

12) $x^2 + (\tan \alpha) \cdot x - 1 = 0$ denkleminin kökleri x_1 ve x_2 dir.

$x_1^2 + x_2^2 = 3$ ise α kaç derece olabilir?

- A) 30 B) 60 C) 75 D) 135 E) 210

13) $\frac{1}{\tan x} + \frac{1}{\cot x} = \frac{4\sqrt{3}}{3}$ denkleminin $[0, 2\pi]$ aralığındaki en küçük kökü aşağıdakilerden hangisidir?

- A) $\frac{\pi}{12}$ B) $\frac{\pi}{8}$ C) $\frac{\pi}{6}$ D) $\frac{\pi}{4}$ E) $\frac{\pi}{2}$

14) $\cos\left(2\arcsin \frac{3}{5}\right)$ ifadesinin değeri kaçtır?

- A) $\frac{4}{5}$ B) $\frac{8}{25}$ C) $\frac{7}{25}$ D) $\frac{1}{5}$ E) $\frac{1}{25}$

15) $\tan\left(\arcsin \frac{1}{2} + \arccos \frac{\sqrt{3}}{2}\right)$ ifadesinin değeri aşağıdakilerden hangisidir?

- A) $\sqrt{3}$ B) $\frac{1}{\sqrt{3}}$ C) $\frac{1}{2\sqrt{3}}$ D) $\frac{\sqrt{3}}{2}$ E) $\frac{1}{2}$

16) $\tan\left(2\arccos \frac{3}{5}\right)$ ifadesinin değeri kaçtır?

- A) $-\frac{24}{7}$ B) $-\frac{1}{7}$ C) $\frac{3}{5}$ D) $\frac{5}{7}$ E) $\frac{4}{3}$

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- 1) $\frac{\operatorname{cosec} 190^\circ + \sec 190^\circ}{\operatorname{cosec} 80^\circ + \sec 80^\circ}$ işleminin sonucu aşağıdakilerden hangisidir?

A) $\sec 10$ B) $\operatorname{cosec} 10$ C) -1
D) 1 E) $\frac{1}{2}$

- 2) $\frac{\cos 75^\circ \cdot \sin 75^\circ}{\sin 15^\circ}$ ifadesinin değeri kaçtır?

A) $\frac{\sqrt{2}}{4} (\sqrt{3} - 1)$ B) $\frac{\sqrt{2}}{4} (\sqrt{3} + 1)$
C) $\frac{\sqrt{2}}{2} (\sqrt{3} - 1)$ D) $\frac{\sqrt{2}}{2} (\sqrt{3} + 1)$
E) $\sqrt{6} - \sqrt{3}$

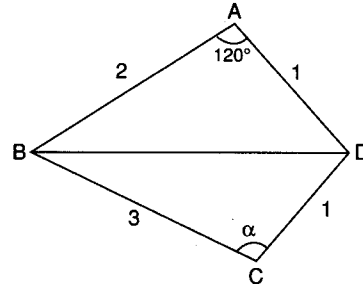
- 3) Bir ABC üçgeninde $\tan(\widehat{BAC}) = 2$ ve $\tan(\widehat{ABC}) = 3$ ise $\cot(\widehat{ACB})$ kaçtır?

A) $\frac{1}{3}$ B) 1 C) $\frac{3}{2}$ D) 2 E) 3

- 4) $\operatorname{cosec} 15^\circ + \frac{1}{\cos 15^\circ}$ ifadesinin değeri kaçtır?

A) $\frac{\sqrt{2}}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{6}}{2}$ D) $\sqrt{6}$ E) $2\sqrt{6}$

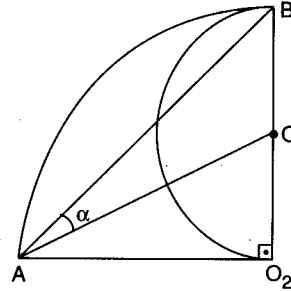
5)



Şekildeki ABCD dörtgeninde $m(\widehat{BAD}) = 120^\circ$, $|AD| = |DC| = 1$ br, $|AB| = 2$ br ve $|BC| = 3$ br ise $m(\widehat{BCD}) = \alpha$ kaç derecedir?

A) 30 B) 45 C) 60 D) 75 E) 120

6)

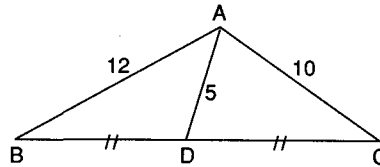


Şekilde O_1 merkezli yarı çember ile O_2 merkezli çeyrek çember verilmiştir.

Buna göre $\cos \alpha$ kaçtır?

A) $\frac{\sqrt{10}}{10}$ B) $\frac{\sqrt{10}}{5}$ C) $\frac{3\sqrt{10}}{10}$
D) $\frac{3\sqrt{10}}{5}$ E) $\frac{2\sqrt{10}}{5}$

7)



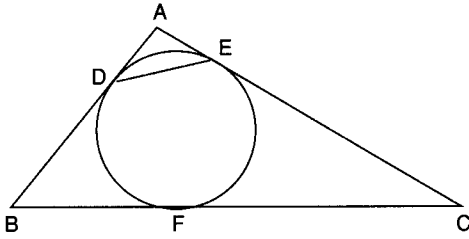
Şekildeki ABC üçgeninde $|BD| = |DC|$, $|AB| = 12$ br, $|AC| = 10$ br ve $|AD| = 5$ br ise $\tan(\widehat{BAC})$ kaçtır?

A) $-\frac{5}{3}$ B) $-\frac{4}{3}$ C) -2 D) $\frac{3}{4}$ E) $\frac{3}{5}$

- 8) $\cos 12^\circ \cdot \cos 24^\circ \cdot \cos 48^\circ \cdot \cos 96^\circ$ işleminin sonucu kaçtır?

A) $-\frac{1}{16}$ B) $-\frac{1}{8}$ C) 0 D) $\frac{1}{8}$ E) $\frac{1}{16}$

9)



Şekilde ABC üçgeni ve iç teğet çemberi verilmiştir. D, E, F değme noktaları, $|AB| = 7$ br, $|AC| = 8$ br ve $m(\widehat{BAC}) = 120^\circ$ ise $|DE|$ kaç br dir?

A) $\sqrt{3}$ B) $2\sqrt{2}$ C) 3 D) $2\sqrt{3}$ E) 4

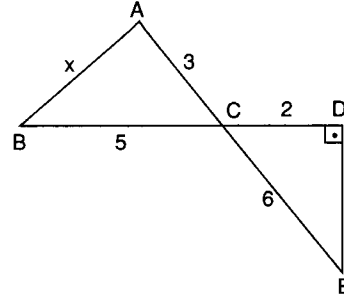
- 10) $\sin 2x + 1 + \cos 2x$ ifadesinin çarpanlarından biri aşağıdakilerden hangisidir?

A) $\sin x - \cos x$ B) $\cos x + \sin x$ C) $\cos^2 x$
D) $\sin^2 x$ E) $\sin x \cdot \cos x$

- 11) Kenar uzunlukları $a = 2$, $b = 1,5$ ve $c = 1$ olan bir ABC üçgeni için $\tan \frac{\widehat{A}}{2}$ kaçtır?

A) $-\sqrt{\frac{5}{3}}$ B) $-\frac{\sqrt{5}}{3}$ C) $\frac{\sqrt{5}}{3}$
D) $\sqrt{\frac{5}{3}}$ E) 1

12)



Şekilde $[BD] \perp [DE]$, A, C, E noktaları doğrusal, $|AC| = 3$ br, $|BC| = 5$ br, $|CD| = 2$ br ve $|CE| = 6$ br ise $|AB| = x$ kaç br dir?

A) $2\sqrt{3}$ B) 4 C) $2\sqrt{6}$ D) 5 E) 6

- 13) $\sin 2x = \cos 40^\circ$ denkleminin $0 < x < \pi$ aralığındaki köklerinin toplamı aşağıdakilerden hangisidir?

A) 25 B) 65 C) 70 D) 90 E) 95

- 14) $0 \leq x + y \leq \pi$ olmak üzere

$\tan x = \frac{\sin 2y}{1 - \cos 2y}$ eşitliğini sağlayan

$x + y$ kaç radyandır?

A) 0 B) $\frac{\pi}{4}$ C) $\frac{\pi}{2}$ D) $\frac{3\pi}{4}$ E) π

- 15) $\cos^2(\alpha + 15) - \cos^2(\alpha - 15) = \frac{\sqrt{3}}{4}$ denkleminin çözüm kümesi aşağıdakilerden hangisidir?

A) $\left\{ x \mid x = k\pi + \frac{\pi}{12} \cup x = k\pi + \frac{5\pi}{12} \quad k \in \mathbb{Z} \right\}$

B) $\left\{ x \mid x = k\pi + \frac{\pi}{6} \cup x = k\pi + \frac{5\pi}{6} \quad k \in \mathbb{Z} \right\}$

C) $\left\{ x \mid x = k\pi + \frac{\pi}{6} \cup x = k\pi - \frac{\pi}{6} \quad k \in \mathbb{Z} \right\}$

D) $\left\{ x \mid x = k\pi + \frac{\pi}{3} \cup x = k\pi - \frac{\pi}{3} \quad k \in \mathbb{Z} \right\}$

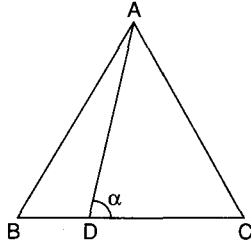
E) $\left\{ x \mid x = k\pi + \frac{2\pi}{3} \cup x = k\pi - \frac{\pi}{6} \quad k \in \mathbb{Z} \right\}$

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1)



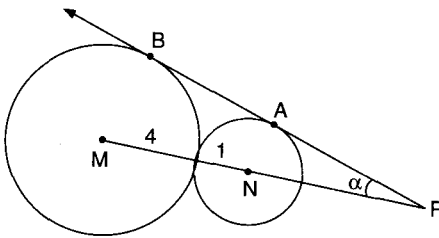
Şekildeki ABC eşkenar üçgeninde $5|BD| = 2|DC|$ ve $m(\widehat{ADC}) = \alpha$ ise $\tan \alpha$ kaçtır?

- A) $\sqrt{3}$ B) $\frac{3\sqrt{2}}{2}$ C) $2\sqrt{3}$ D) $\frac{7\sqrt{3}}{3}$ E) $\frac{5\sqrt{3}}{2}$

2) $\frac{1}{1 - \tan x} + \frac{1}{1 + \tan x} = -1$ eşitliğini $[0, 2\pi]$ aralığındaki en büyük kökü kaç radyandır?

- A) $\frac{\pi}{3}$ B) $\frac{2\pi}{3}$ C) $\frac{4\pi}{3}$ D) $\frac{5\pi}{3}$ E) $\frac{7\pi}{3}$

3)



Şekilde M ve N merkezli çemberlerin yarıçapları sırası ile 4 ve 1 birimdir. Çemberler birbirine dıştan teğet ve A, B değme noktaları ve $m(\widehat{MPN}) = \alpha$ ise $\tan \alpha$ kaçtır?

- A) $\frac{1}{4}$ B) $\frac{3}{4}$ C) $\frac{4}{3}$ D) $\frac{4}{5}$ E) $\frac{5}{4}$

4) $\frac{1}{1 + \cos x} + \frac{1}{1 - \cos x}$ ifadesinin sonucu aşağıdakilerden hangisidir?

- A) $2\cos^2 x$ B) $2\sec^2 x$ C) $2\operatorname{cosec}^2 x$
D) $2\sin^2 x$ E) $\sin^2 x$

5) $\cos 105^\circ$, $\sin 110^\circ$, $\tan 310^\circ$, $\cot 230^\circ$ nin işaretleri sırasıyla aşağıdakilerden hangisidir?

- A) -, -, +, + B) +, -, -, +
C) -, +, -, + D) -, +, -, -
E) -, +, +, +

6) $a = \sin 110^\circ$, $b = \cos 70^\circ$, $c = \sin 80^\circ$ olduğuna göre aşağıdaki sıralamalardan hangisi doğrudur?

- A) $b < c < a$ B) $b < a < c$ C) $a < b < c$
D) $c < a < b$ E) $c < b < a$

7) $0 < \alpha < \frac{\pi}{2}$ olmak üzere,

$$\frac{\tan\left(\frac{\pi}{2} + \alpha\right) - \cos(\pi + \alpha)}{\sin\left(\frac{3\pi}{2} - \alpha\right) - \cot(-\alpha)}$$

ifadesinin sadeleştirilmiş biçimi aşağıdakilerden hangisidir?

- A) -1 B) 0 C) 1 D) $\cot x$ E) $\tan x$

8) $\tan x = \frac{3}{2}$ ve $\tan y = \frac{2}{3}$ ise

$x + y$ toplamı aşağıdakilerden hangisidir?

- A) 30 B) 45 C) 60 D) 75 E) 90

9) $0 < 2x < \frac{\pi}{2}$ olmak üzere ,

$\tan 2x = \frac{3}{4}$ ise $\tan x$ kaçtır?

- A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $\frac{1}{4}$ D) $\frac{3}{2}$ E) 3

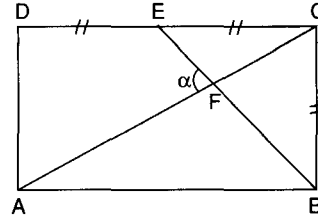
10) $\sin \frac{x}{2} - \cos \frac{x}{2} = \frac{1}{2}$ ise $\cos 2x$ kaçtır?

- A) $\frac{3}{4}$ B) $\frac{4}{7}$ C) $\frac{3}{7}$ D) $-\frac{1}{8}$ E) $-\frac{3}{4}$

11) $\sin x - \cos x = \frac{1}{2}$ ise $\sin 2x$ kaçtır?

- A) $\frac{1}{4}$ B) $\frac{1}{3}$ C) $\frac{1}{2}$ D) $\frac{2}{3}$ E) $\frac{3}{4}$

12)



Şekildeki ABCD dikdörtgeninde $|DE| = |EC| = |BC|$ ve $m(\widehat{AFE}) = \alpha$ ise $\tan \alpha$ kaçtır?

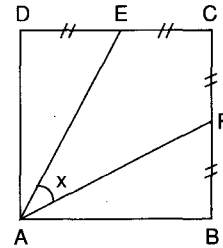
- A) $\frac{1}{2}$ B) 1 C) $\frac{3}{2}$ D) 3 E) $\frac{7}{2}$

13) $x + y = \frac{3\pi}{2}$ ve $\sin x = \frac{1}{4}$ ise

$\cos(2x + y)$ kaçtır?

- A) $\frac{\sqrt{3}}{5}$ B) $\frac{\sqrt{5}}{3}$ C) $\frac{\sqrt{15}}{8}$ D) $\frac{\sqrt{15}}{4}$ E) $\frac{1}{4}$

14)



Şekilde ABCD kare, E, F ait oldukları kenarların orta noktaları ve $m(\widehat{EAF}) = x$ ise $\cos x$ kaçtır?

- A) $\frac{2}{3}$ B) $\frac{3}{4}$ C) $\frac{4}{5}$ D) $\frac{5}{6}$ E) 1

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1) $\frac{7}{\sin x} = \frac{24}{\cos x}$ ise $\sin x$ kaçtır?

- A) $\frac{27}{25}$ B) $\frac{24}{25}$ C) $\frac{7}{25}$ D) $\frac{8}{25}$ E) $\frac{17}{25}$

2) $\sin 10^\circ = a$ ise

$\cos 260^\circ + \cos 280^\circ + \sin 190^\circ$ toplamı aşağıdakilerden hangisidir?

- A) $-2a$ B) $-a$ C) 0 D) a E) $2a$

3) Bir ABC üçgeninde $a = 6$ br ve $m(\widehat{BAC}) = 30^\circ$ ise üçgenin çevrel çemberinin yarıçapı kaç br dir?

- A) 2 B) 4 C) 6 D) 8 E) 10

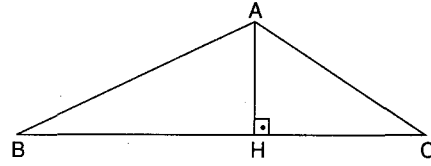
4) $5\sin x + 4\cos x = 0$ ise $\sin 2x$ kaçtır?

- A) $\frac{40}{41}$ B) $-\frac{40}{41}$ C) $\frac{24}{25}$
D) $-\frac{24}{25}$ E) $-\frac{20}{41}$

5) $\sqrt{3} \cos x - \sin x = 0$ denkleminin köklerinden biri aşağıdakilerden hangisidir?

- A) $\frac{\pi}{6}$ B) $\frac{5\pi}{6}$ C) $\frac{4\pi}{3}$ D) $\frac{5\pi}{3}$ E) $\frac{7\pi}{6}$

6)



Şekildeki ABC üçgeninde $[AH] \perp [BC]$ ve

$\frac{|BH|}{3} = \frac{|HC|}{2} = |AH|$ ise $\tan(\widehat{BAC})$ kaçtır?

- A) $-\frac{1}{2}$ B) $-\frac{1}{3}$ C) -1
D) $-\frac{2}{3}$ E) $-\frac{3}{2}$

7) $\frac{\sin x - 2\sin x \cdot \cos^2 x}{\cos 2x} + \sin x$ ifadesinin

sadeleştirilmiş şekli aşağıdakilerden hangisidir?

- A) $2\sin x$ B) $2\cos x$ C) 0
D) 1 E) $\sin 2x$

8) $5\alpha = \frac{\pi}{2}$ ise

$\frac{1}{\sin \alpha} - \frac{1}{\sin 3\alpha}$ ifadesinin değeri kaçtır?

- A) 3 B) 2 C) $\frac{1}{2}$ D) $-\frac{1}{3}$ E) -2

9) $13\alpha = \pi$ ise

$\frac{\cos 11\alpha + \cos 9\alpha}{\cos 4\alpha + \cos 2\alpha}$ ifadesinin değeri kaçtır?

- A) -2 B) -1 C) $-\frac{1}{2}$ D) 1 E) 2

10) $\frac{\sin 3\alpha}{\sin \alpha} - \frac{\cos 3\alpha}{\cos \alpha}$ ifadesinin sadeleştirilmiş

biçimi aşağıdakilerden hangisidir?

- A) $\frac{1}{2}$ B) $\sin 2\alpha$ C) $\cos 2\alpha$ D) 2 E) 0

11) $\frac{\sin 220^\circ - \cos 70^\circ}{\sin 80^\circ}$ ifadesinin değeri kaçtır?

- A) -1 B) $-\frac{1}{2}$ C) $-\frac{\sqrt{3}}{2}$ D) $-\sqrt{3}$ E) -2

12) $0^\circ < x < 90^\circ$ olmak üzere,

$\frac{1}{\sin x} = \frac{2}{\cos x}$ ise $\sin x$ kaçtır?

- A) $\frac{4}{\sqrt{5}}$ B) $\frac{3}{\sqrt{5}}$ C) $\frac{2}{\sqrt{5}}$ D) $\frac{1}{\sqrt{5}}$ E) $\frac{1}{2}$

13) $\tan 2x \cdot \cot x + 1 = 0$ denkleminin $0 < x < \pi$ aralığındaki köklerinin toplamı kaç derecedir?

- A) 60 B) 90 C) 120 D) 150 E) 180

14) $\pi < x < \frac{3\pi}{2} < y < 2\pi$ ve

$\sin x = \sin y$ ise

$x + y$ kaç dik açıya eşittir?

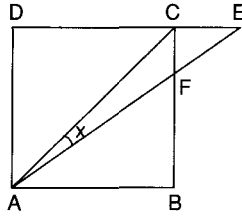
- A) 6 B) 7 C) 8 D) 9 E) 10

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1)



Yukarıdaki ABCD karesinde $CE = \frac{DC}{3}$ olduğuna göre $\tan x$ in değeri aşağıdakilerden hangisidir?

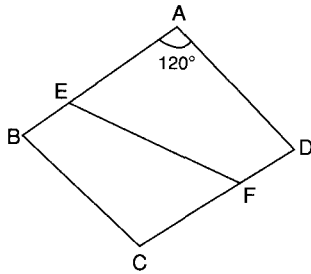
- A) $\frac{1}{8}$ B) $\frac{1}{7}$ C) $\frac{1}{6}$
D) $\frac{1}{5}$ E) $\frac{1}{4}$ (1978)

2) $10a = \frac{\pi}{2}$ olduğuna göre

$\frac{\cos 4a - \cos 8a}{\cos 4a \cdot \cos 8a}$ ifadesinin değeri kaçtır?

- A) 2 B) 1 C) -2
D) -1 E) $-\frac{1}{2}$ (1980)

3)



Yukarıdaki ABCD eşkenar dörtgeninde $|AB| = 3$ cm, $m(\widehat{BAC}) = 120^\circ$ dir. $|BE| = |DF| = 1$ cm olduğuna göre $|EF|$ uzunluğu kaç cm dir?

- A) $\sqrt{7}$ B) $\frac{2\sqrt{3}}{3}$ C) $\frac{3\sqrt{3}}{2}$
D) $\sqrt{10}$ E) $\sqrt{13}$ (1980)

- 4) I. $\sin 85^\circ$
II. $\tan 175^\circ$
III. $\cos 260^\circ$
IV. $\cot 275^\circ$

Yukarıdaki trigonometrik değerlerin işaretleri sırasıyla ne olur?

- A) +, -, +, - B) -, -, -, + C) +, -, -, +
D) -, -, -, - E) +, -, -, -

(1981-II)

5) Aşağıdakilerden hangisi $\sin 40^\circ$ ye eşittir?

- A) $\sin 220^\circ$ B) $\cos 130^\circ$ C) $\cos(-50^\circ)$
D) $\sin(-40^\circ)$ E) $\sin 50^\circ$

(1982-II)

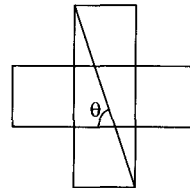
6) $0 < x < \frac{\pi}{2}$, $\tan x = \frac{4}{3}$ olduğuna göre,

$\frac{\sin^3 x - \cos^3 x}{1 + \frac{1}{2} \sin 2x}$ ifadesinin değeri kaçtır?

- A) $\frac{1}{5}$ B) $\frac{2}{5}$ C) $\frac{3}{5}$
D) $\frac{4}{3}$ E) 1

(1983-II)

7)

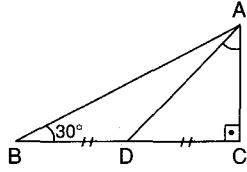


Yandaki şekil, üst tabanı olmayan bir küpün açılımı olduğuna göre, $\tan \theta$ nın değeri kaçtır?

- A) 6 B) 5 C) 4
D) 3 E) 2

(1983-II)

8)



Yukarıdaki şekilde $m(\widehat{ABC}) = 30^\circ$,
 $m(\widehat{BCA}) = 90^\circ$, $|BD| = |DC|$ olduğuna göre
 $\text{tg}(\widehat{DAC})$ nin değeri kaçtır?

- A) $\frac{\sqrt{3}}{2}$ B) $\frac{\sqrt{5}}{2}$ C) $\frac{\sqrt{5}}{3}$
 D) $\sqrt{3}$ E) $2\sqrt{3}$

(1983-II)

9) Aşağıdakilerden hangisi $\sin(\frac{\pi}{2} - a)$ ya
 özdeş değildir?

- A) $\sin(\frac{\pi}{2} + a)$ B) $\sin(-a)$ C) $\cos(-a)$
 D) $\cos a$ E) $\cos(2\pi - a)$

(1984-II)

10) $\cos^2 \frac{\pi}{8} + \sin^2 \frac{3\pi}{8} = \frac{a}{2}$ olduğuna göre,
 a nın değeri aşağıdakilerden hangisidir?

- A) $\frac{1}{2}$ B) $\frac{\sqrt{2}}{2}$ C) $2 + \sqrt{2}$
 D) 1 E) $\sqrt{2} - 1$

(1984-II)

11) $\frac{1}{\sin 15^\circ} + \frac{1}{\cos 15^\circ}$ toplamının değeri nedir?

- A) $1 + \sqrt{3}$ B) $3\sqrt{2}$ C) $2\sqrt{6}$
 D) $\frac{\sqrt{3}}{2}$ E) $\frac{\sqrt{3}}{4}$

(1985-II)

12) $a = \sin 5^\circ$

$$b = \sin 85^\circ$$

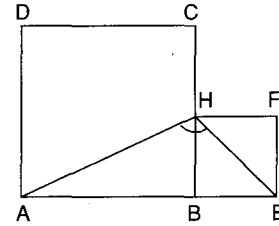
$$c = \sin 105^\circ \text{ olduğuna göre}$$

aşağıdakilerden hangisi doğrudur?

- A) $a < b < c$ B) $a < c < b$ C) $b < a < c$
 D) $b < c < a$ E) $c < b < a$

(1985-II)

13)



Yukarıdaki şekilde ABCD ve BEFH birer
 karedir.

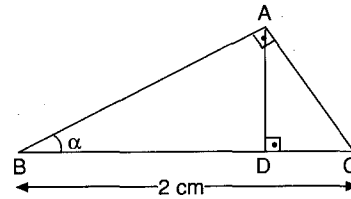
$$|AB| = 2|BE| \text{ olduğuna göre}$$

$\sin(\widehat{AHE})$ nin değeri nedir?

- A) $\frac{3\sqrt{2}}{4}$ B) $\frac{5\sqrt{3}}{3}$ C) $\frac{2\sqrt{5}}{5}$
 D) $\frac{2\sqrt{7}}{7}$ E) $\frac{3\sqrt{10}}{10}$

(1985-II)

14) Aşağıdaki ABC üçgeninde



$$|BC| = 2 \text{ cm}, AB \perp AC,$$

$$AD \perp BC, \text{ ABD açısının ölçüsü } \alpha \text{ ise}$$

|AD| nin değeri aşağıdakilerden hangisidir?

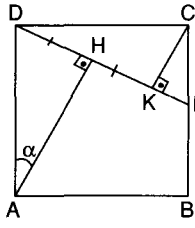
- A) $\sin 2\alpha$ B) $1 - \sin 2\alpha$ C) $1 + \sin 2\alpha$
 D) $2 - \sin 2\alpha$ E) $2 + \sin 2\alpha$

(1986-II)

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15) Aşağıdaki şekilde ABCD bir kare olduğuna göre



$$\begin{aligned} m(\widehat{CKE}) &= 90^\circ, \\ m(\widehat{DHA}) &= 90^\circ \\ |DH| &= |HK|, \\ m(\widehat{DAH}) &= \alpha^\circ \end{aligned}$$

$\tan \alpha$ nın değeri kaçtır?

- A) $\frac{\sqrt{2}}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $\frac{3}{4}$
D) $\frac{2}{3}$ E) $\frac{1}{2}$

(1987-II)

16) $\sin 2x = \cos 35^\circ$ denkleminin $[0^\circ, 90^\circ]$ aralığındaki kökü kaç derecedir?

- A) 70 B) 65 C) 37,5
D) 27,5 E) 17,5

(1987-II)

17) 229632 saniyelik bir açı kaç derece, kaç dakika ve kaç saniyedir?

- A) $63^\circ 47' 12''$ B) $63^\circ 47' 22''$ C) $63^\circ 46' 12''$
D) $63^\circ 46' 22''$ E) $62^\circ 47' 12''$

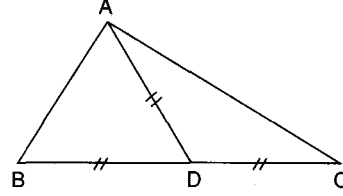
(1966 - II)

18) $\sin 210^\circ$ nin değeri aşağıdakilerden hangisidir?

- A) $\frac{1}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $-\frac{1}{2}$
D) $\frac{\sqrt{2}}{2}$ E) $-\frac{1}{\sqrt{2}}$

(1974)

19)



Yukarıdaki üçgende $|AD| = |BD| = |CD|$ ve $\text{tg} B = 2$ dir.

Buna göre $\cot C$ nin değeri nedir?

- A) $\frac{1}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $\frac{3}{2}$ D) 2 E) 3

(1981 - II)

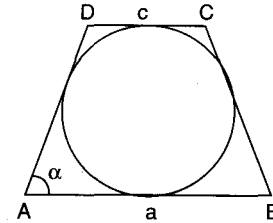
20) $\cos(\arcsin x)$ ifadesi aşağıdakilerden hangisine eşittir?

- A) $\cos x$ B) $\sqrt{x^2 - 1}$ C) 1
D) $\sqrt{1 - x^2}$ E) $\sin x$

(1976)

21) Aşağıdaki şekilde ABCD bir ikizkenar teğetler yamığıdır.

Buna göre, $\cos \alpha$ nın değeri nedir?



$$\begin{aligned} m(\widehat{DAB}) &= \alpha \\ |AB| &= a \\ |CD| &= c \\ a &> c \end{aligned}$$

- A) $\frac{a-c}{a+c}$ B) $\frac{a-c}{2a+c}$ C) $\frac{a-c}{a+2c}$
D) $\frac{a}{a+c}$ E) $\frac{c}{a+c}$

(1987 - II)

22) $\cos\alpha = \frac{\sqrt{3}}{3}$ ve $0 < \alpha < \frac{\pi}{2}$ ise

$\cos 2\alpha$ aşağıdakilerden hangisidir?

- A) $\frac{1}{2}$ B) $\frac{1}{3}$ C) $-\frac{1}{2}$
D) $-\frac{1}{3}$ E) $-\frac{3}{4}$

(1974)

23) $\tan x = \frac{\sin 2y}{1 - \cos 2y}$ olduğuna göre

$x + y$ nin 0 ile π arasındaki değeri kaç radyandır?

- A) $\frac{\pi}{2}$ B) $\frac{\pi}{3}$ C) $\frac{\pi}{4}$ D) $\frac{\pi}{5}$ E) $\frac{\pi}{6}$

(1981 - II)

24) $\tan x = 2$ olduğuna göre

$\cos^2 x - \cos x \sin x$ ifadesinin değeri nedir?

- A) -1 B) $-\frac{1}{3}$ C) $-\frac{1}{5}$ D) 0 E) $\frac{2}{3}$

(1982 - II)

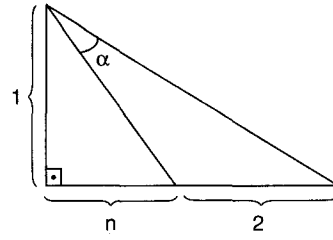
25) $\tan \theta = \frac{1}{2}$ ve $0 < \theta < \frac{\pi}{2}$ olduğuna göre

$\cos \theta$ nin değeri aşağıdakilerden hangisidir?

- A) 1 B) $\frac{\sqrt{3}}{2}$ C) -1 D) $-\frac{1}{2}$ E) $\frac{2}{\sqrt{5}}$

(1975)

26)



Yukarıdaki şekle göre $\tan \alpha$ aşağıdakilerden hangisine eşittir?

- A) $\frac{1}{(n+1)^2}$ B) $\frac{2}{(n+1)^2}$ C) $\frac{2}{\sqrt{n^2+1}}$
D) $\frac{2}{\sqrt{n^2-1}}$ E) $\frac{2}{n^2+n+1}$

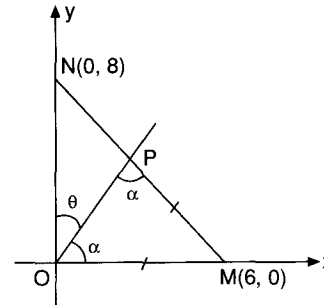
(1977)

27) Bir üçgende $\hat{A} = 60^\circ$ ve $a = \sqrt{3}(b - c)$ olduğuna göre **B** ve **C** açıları sırasıyla aşağıdakilerden hangisidir?

- A) $70^\circ, 50^\circ$ B) $90^\circ, 30^\circ$ C) $60^\circ, 60^\circ$
D) $80^\circ, 40^\circ$ E) $50^\circ, 70^\circ$

(1974)

28)



Yukarıdaki şekilde $N(0, 8)$, $M(6, 0)$, $\widehat{MOP} = \widehat{OPM} = \alpha$, $\widehat{PON} = \theta$ olduğuna göre $\sin \theta$ nin değeri kaçtır?

- A) $\frac{\sqrt{3}}{2}$ B) $\frac{2}{\sqrt{5}}$ C) $\frac{1}{\sqrt{5}}$ D) $\frac{1}{2}$ E) $\frac{1}{\sqrt{2}}$

(1979)

29) $\cos^2(x - y) + \sin^2(x + y)$ nin değeri aşağıdakilerden hangisidir?

- A) $1 + \cos 2x \cdot \sin 2y$ B) $1 + \sin 2x \cdot \cos 2y$
C) $1 + \sin 2x \cdot \sin 2y$ D) $1 + \cos 2x \cdot \cos 2y$
E) $1 - \sin 2x \cdot \sin 2y$

(1986 - II)

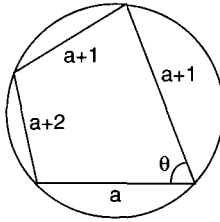
30) $2\cos^2 x - 5\cos x + 2 = 0$ denkleminin genel çözümü aşağıdakilerden hangisidir?

(k pozitif bir tamsayıdır.)

- A) $2k\pi \pm \frac{\pi}{3}$ B) $2k\pi \pm \frac{\pi}{4}$ C) $(2k \pm 1)\pi$
D) $2k\pi \pm \frac{\pi}{6}$ E) $(4k \pm 1)\frac{\pi}{2}$

(1979)

31)



Verilen şekilde $\cos \theta$ nın değeri ne olur?

- A) $\frac{1}{a+1}$ B) $\frac{a}{a+1}$ C) $\frac{a}{a+2}$
D) $-\frac{1}{a+2}$ E) $-\frac{1}{a+1}$

(1975)

32) ABC üçgeninde $m(\hat{A}) = 60^\circ$,

$b = 12$, $c = 10$ ise

a kenarı, aşağıdakilerden hangisidir?

- A) $\sqrt{31}$ B) $\frac{3 \cdot \sqrt{31}}{2}$ C) $\frac{\sqrt{31}}{2}$
D) $2\sqrt{31}$ E) $3 \cdot \sqrt{31}$

(1974)

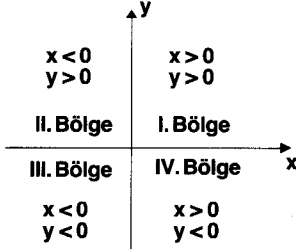
33) $\cos^2 x + \cos 2x = \sin^2 x + \sin 2x$ denklemini sağlayan en küçük dar açının tanjantı kaçtır?

- A) $\frac{\sqrt{5}-1}{2}$ B) $2 + \sqrt{5}$ C) $1 + \sqrt{5}$
D) $\frac{\sqrt{5}}{2}$ E) $\frac{\sqrt{5}+1}{2}$

(1986 - II)

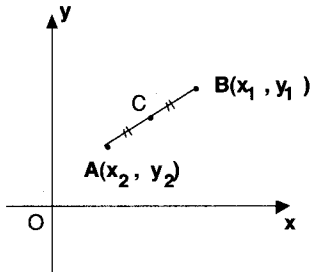
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**Dik koordinat sistemi**

Simetri: A(x, y) noktasının,

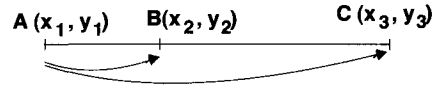
- x eksenine göre simetriği (x, -y)
- y eksenine göre simetriği (-x, y)
- (0, 0) noktasına (orijine) göre simetriği (-x, -y)
- $y = x$ doğrusuna göre simetriği (y, x)
- $y = -x$ doğrusuna göre simetriği (-y, -x)
- $x = a$ doğrusuna göre simetriği (2a - x, y)
- $y = b$ doğrusuna göre simetriği (x, 2b - y)
- (a, b) noktasına göre simetriği (2a - x, 2b - y) dir.

Doğru parçasının uzunluğu

$$|AB| = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2} \text{ ve}$$

[AB] nin orta noktasının koordinatları

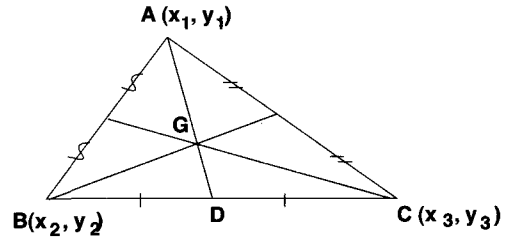
$$C\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right) \text{ dir.}$$

Bir doğru parçasını belli oranda bölme

ise AC doğru parçası,

$$\frac{|AB|}{|AC|} = \frac{x_2 - x_1}{x_3 - x_1} = \frac{y_2 - y_1}{y_3 - y_1} = k \text{ ile}$$

belli oranda B noktası ile bölünür.

ABC üçgeninin ağırlık merkezinin koordinatları

G ağırlık merkezi ise

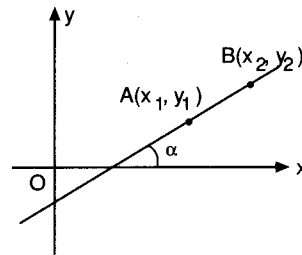
$$G\left(\frac{x_1 + x_2 + x_3}{3}, \frac{y_1 + y_2 + y_3}{3}\right) \text{ dir.}$$

$$A(ABC) = \frac{1}{2} \begin{vmatrix} x_1 & y_1 & 1 \\ x_2 & y_2 & 1 \\ x_3 & y_3 & 1 \end{vmatrix} \text{ işleminin sonucudur.}$$

Doğrunun denklemi: Eğimi m olan ve A(x₀, y₀)

noktasından geçen doğrunun denklemi

$$y - y_0 = m(x - x_0) \text{ dir.}$$



$$\text{Eğim} = \tan \alpha = m_{AB} = \frac{y_2 - y_1}{x_2 - x_1} \text{ dir.}$$

KAVRAM YAYINLARI

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