

YÖS

EN
DENEME

DENEME SINAVI

Düzenleme 60. soru e fakat (-6) olmalı
9. soru 3. 4 olmalı
29. soru 4P-96 olacak
47B olacak

EN DENEME & İNTYÖS

İŞBİRLİĞİ İLE

ÜNİVERSİTELERİN

YÖS SINAVLARINA UYGUN

YENİ NESİL 5'Lİ DENEME

1

INTERNATIONAL

YÖS

1. I. İZMİR > 01110111
II. BURSA > ?

- A) 01000011
B) 101111100
C) 101101101
D) 010100110
E) 110101011

Sesli harfler için
0, sessiz harfler
için 1 kullanılmış.

BURSA
1 0 1 1 1 0 0

2.

$$\begin{array}{r} 2^A B C 9 \\ \times 1^D E A 2 \\ \hline 5 7 \cdot 8 \\ + 2^8 6 7 \\ \hline 3 8 1 4 8 \end{array}$$

E = ?

- A) 1 B) 3 C) 5 D) 7 E) 9

$A \times D = 2$ olması için $A=2$ dir
 $A \times C = 8$ yada 18 olması

3. I. $p \cdot q = 4p - q$
II. $6 \cdot 4 = 8 \cdot r$

$r = ?$

- A) 13 B) 20 C) 12 D) 6 E) 10

$$6 \cdot 4 = 4 \cdot 6 - 4 = 20$$

$$20 = 8 \cdot r = 4 \cdot 8 - r \Rightarrow r = 32 - 20$$

$$r = 12 //$$

ÜÇ
OKI

! Harf sayıları
eşit olmalı.

4. I. $3 = 10$
II. $4 = 6$
III. $2 = 5$
IV. $8 = ?$

SEKİZ
DOKUZ

- A) 9 B) 16 C) 13 D) 17 E) 14

5. 58, 47, ?, 32, 25, 17, 13, 11, 10

- A) 35 B) 36 **C) 37** D) 38 E) 39

$$32 + (3 + 2) = 37 \text{ olmalı}$$

7.

+	A	Y	D	I	N
N	4				
A					4
D			4		
I		7			
Y			3		

$$A + Y + D + I + N = ?$$

- A) 12 **B) 13** C) 15 D) 18 E) 24

$$\begin{array}{r} A + N = 4 \\ + I + Y = 7 \\ \hline A + Y + I + N = 11 \\ + D = 2 \\ \hline A + Y + D + I + N = 13 \end{array}$$

$2D = 4$
 $D = 2$

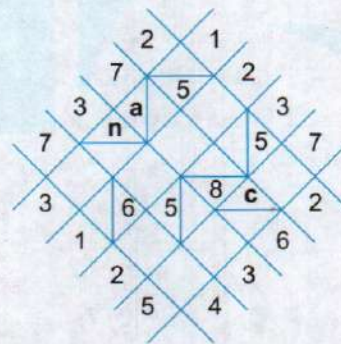
6. 641, 552, 663, 974, 486, ?

- A) 648 B) 319 C) 979
D) 849 **E) 198**

$$\begin{array}{c} 641 \\ \downarrow \\ 4^2 \\ \downarrow \\ 16 \\ \swarrow \downarrow \searrow \\ 6 \quad 4 \quad 1 \end{array}$$

$$\begin{array}{c} 9^2 \\ \downarrow \\ 81 \\ \swarrow \searrow \\ 1 \quad 9 \quad 8 \end{array}$$

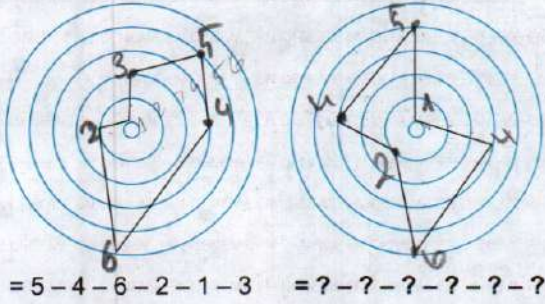
8.



$$\begin{array}{l} n = 3 + 1 = 4 \\ a = 7 + 3 = 10 \\ c = 7 + 7 = 14 \\ \frac{a+c}{n} = ? \quad \frac{10 + 14}{4} = 6 \end{array}$$

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

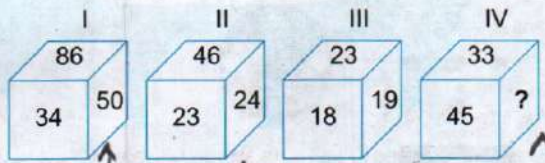
9.



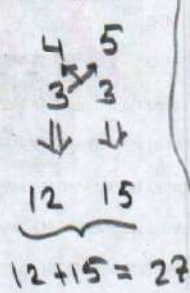
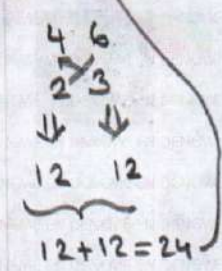
- A) 4-5-1-6-2-3
- B) 3-1-4-6-5-2
- C) 6-2-5-1-4-3
- D) 4-5-1-3-6-2**
- E) 5-4-6-2-1-3

→ 4 olacak

10.

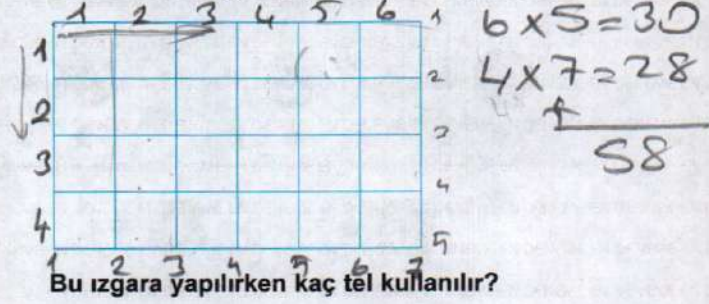


- A) 29
- B) 27**
- C) 25
- D) 24
- E) 23



11. Aşağıda 1x1 birimlik karelere bölünmüş 4x6 tel ızgara verilmiştir.

Below 4x6 wire grid is given in unit squares.



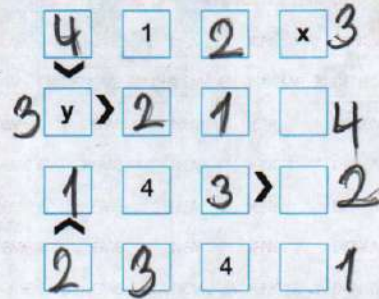
Bu ızgara yapılırken kaç tel kullanılır?

How many wires are needed to be used while making this grid?

- A) 52
- B) 54
- C) 56
- D) 58**
- E) 60

12. Aşağıda verilen Futoshiki Bulmacasında 1 - 2 - 3 - 4 rakamlarını satır ve sütunlara yalnızca bir defa kullanarak ve "Büyüktür" (>), "Küçüktür" (<) kurallarına uygun olarak doldurulduğunda $x + y = ?$

What is $x + y$ in that Futoshiki puzzle below when you use 1, 2, 3 and 4 only once for each row and column, respecting greater-than (>) and less-than (<) symbols?



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

DENEME-1

13. Sabit

A) B) C) D) E)

15.

A) B) C) D) E)

+ Saat yönünde 90° döner
 ● Saat yönünün tersine 90° döner

14. Renk değiştirerek

A) B) C) D) E)

16.

Beyazlar siyah
 Siyahlar beyaz olmuştur
 Ortadaki şekil silinmiş

A) B) C) D) E)

17. Aşağıdaki harflerden hangisi bir özelliğinden dolayı diğerlerinden farklıdır?

Which one is different in terms of a quality of it?

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

A'nın dikey simetrisi var diğerlerinin yatay.

A - B - C - D - E

18. Aşağıdaki tablonun içerisine sayıları öyle yerleştirin ki satır-sütun ve çapraz toplamaları birbirine eşit olsun. Bu durumda tablodaki A yerine hangisi sayı gelir?

Put the numbers in the table below in such a way that the sums in rows, columns and crosswise will be equal to each other. Which number should be written of "A" in the case?

20	7	21
17	A	15
11	25	12

- A) 13 B) 14 C) 15 D) 16 E) 17

Ax3 = Satır ya da Sütun toplamı olmalı.

19. Yanda verilen Kakuro oyununda;

	5	6
8	3	5
3	2	1

- I. Satır ve sütunda aynı sayılar yan yana gelmeyecek,
II. Sıfır (0) kullanılmamak üzere tabloya yerleştirilecek

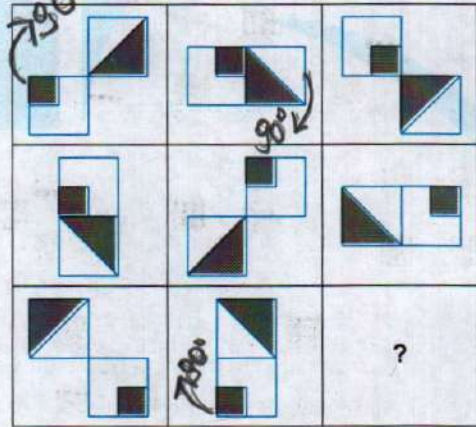
$$\frac{x \cdot y}{z + t} = ? \quad \frac{3 \cdot 5}{2 + 1} = \frac{15}{3} = 5$$

In this Kakuro game;

- I. Numbers will not be next to each other on rows and columns
II. 0 (zero) will not be used in the table

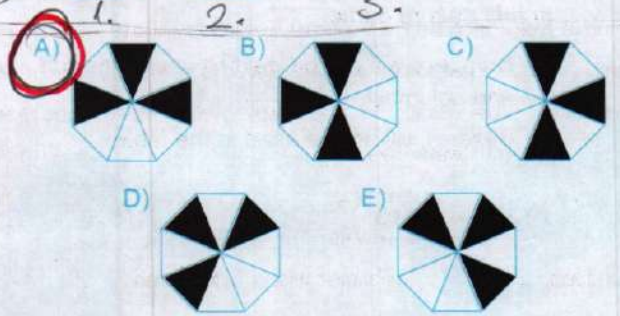
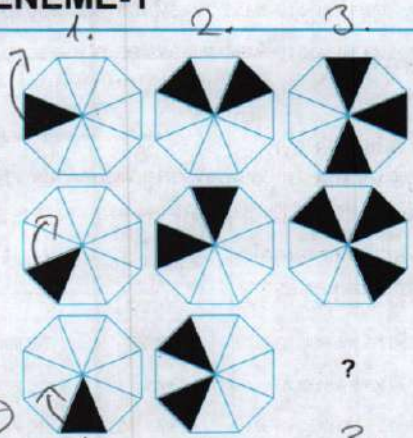
- A) 2 B) 3 C) 4 D) 5 E) 6

- 20.



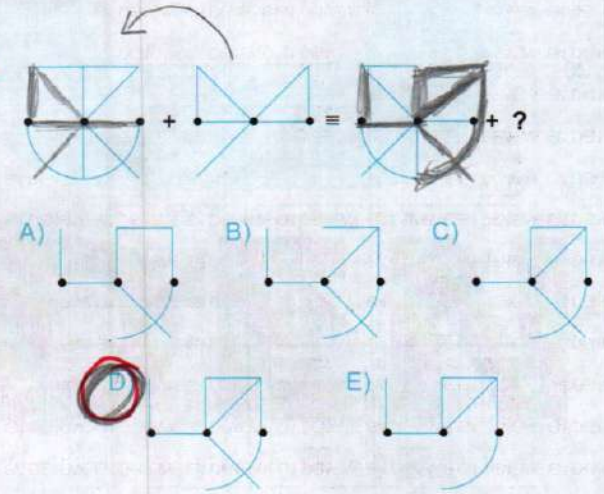
- A) B) C) D) E)

21.

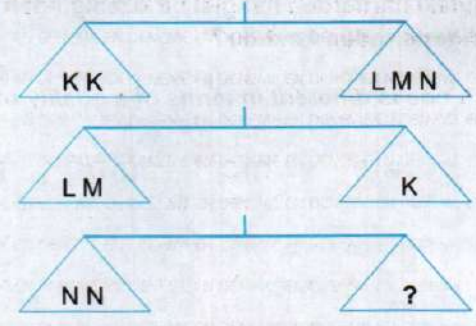


Siyahı saat yönünde döndür.
Bir boş bir siyah olacak

22.



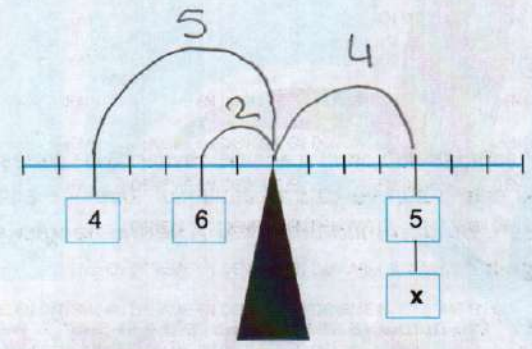
23.



- A) K
- B) KK
- C) KKK
- D) KKKK
- E) KKKKK

$K \equiv LM \Rightarrow$
 $KK \equiv LM \equiv LN$
 $K = LM = N$

24.



- $x = ?$
- A) 2
 - B) 3
 - C) 4
 - D) 5
 - E) 6

$$(4 \times 5) + (6 \times 2) = 4 \times (5 + x)$$

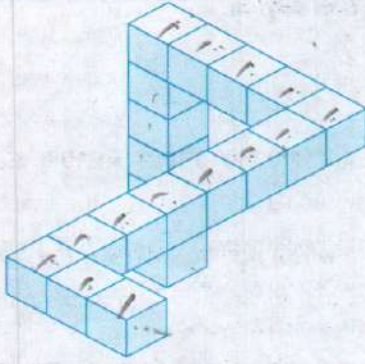
$$20 + 12 = 20 + 4x$$

$$32 = 20 + 4x$$

$$\frac{12}{4} = x$$

$$3 = x$$

25.

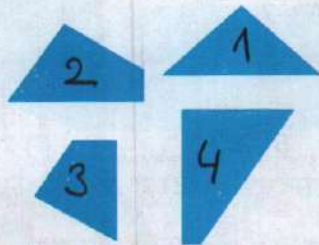


Küplere "Kuş Bakışı" bakan bir kişi kaç küp görür?

How many cubes can one see in the bird's-eye view?

- A) 12 B) 11 C) 13 D) 15 E) 14

26.

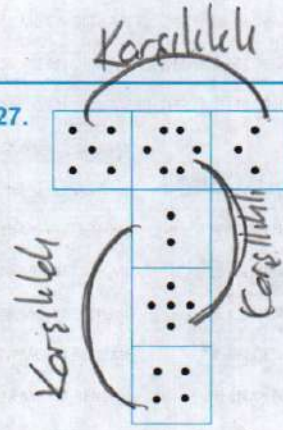


Şekildeki tangram parçasının birleştirilmiş hali aşağıdakilerden hangisidir?

Which on below is the combined version of the separate tangram pieces above?

- A) B) C) D) E)

27.

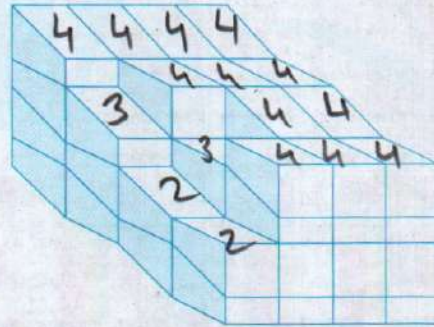


Aşağıdakilerden hangisi yandaki küpün kapalı halidir?

Which one below is the closed version of the dice next?

- A) B) C) D) E)

28.

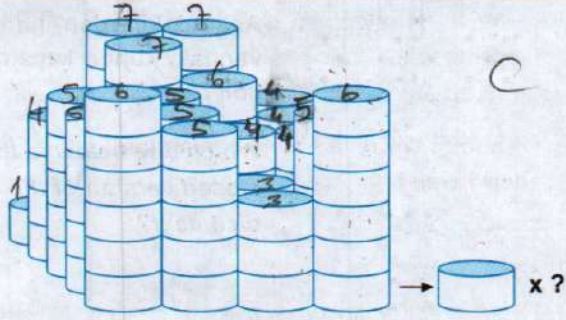


Şekilde kaç tane tuğla vardır?

How many bricks are there in the diagram?

- A) 53 B) 54 C) 55 D) 58 E) 59

29.



- A) 95 B) 93 C) 92 D) 91 E) 89

CEVAP ⇒ 96

$$3 \cdot 7 = 21$$

$$3 \cdot 6 = 18$$

$$6 \cdot 5 = 30$$

$$5 \cdot 4 = 20$$

$$2 \cdot 3 = 6$$

$$1 \cdot 1 = 1$$

$$\begin{array}{r} + \\ 96 \end{array}$$

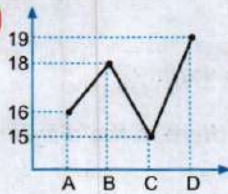
Köşe Sayıları

30.

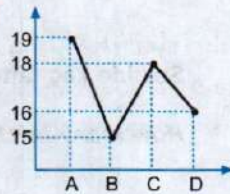
A	☆ ⁴	☆ ⁷	☆ ⁵	→ 16
B	☆ ⁵	☆ ⁵	☆ ⁸	→ 18
C	☆ ⁴	☆ ⁷	☆ ⁴	→ 15
D	☆ ⁴	☆ ⁸	☆ ⁷	→ 19

?

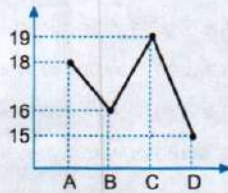
(A)



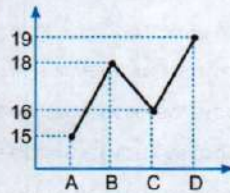
B)



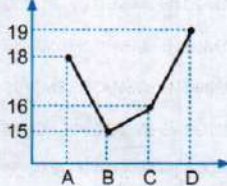
C)



D)



E)

31. x bir tam sayıdır.

$$\frac{4x-3}{x+3}$$

ifadesini tam sayı yapan x değerleri toplamı kaçtır?

" x " is a whole number. What is the sum of the values that make $\frac{4x-3}{x+3}$ a whole number?

- (A)** -24 B) 12 C) 0 D) -18 E) -12

$$\frac{4x+12-15}{x+3} \Rightarrow 4 - \frac{15}{x+3} \Rightarrow \text{ifade 15'in böleni olmalı}$$

$$x+3=1 \quad x=-2$$

$$x+3=3 \quad x=0$$

$$x+3=5 \quad x=+2$$

$$x+3=15 \quad x=+12$$

$$x+3=-1 \quad x=-4$$

$$x+3=-3 \quad x=-6$$

$$x+3=-5 \quad x=-8$$

$$x+3=-15 \quad x=-18$$

$$\begin{array}{r} + \\ -24 \end{array}$$

32. $A = (101,32)_5$ ise $A = ?$

If $A = (101,32)_5$, $A = ?$

- A) 26,61 B) 26,65 **(C)** 26,68
D) 26,7 E) 26,81

$$\left(\begin{array}{c} 2 \cdot 10^{-1} + 1 \cdot 10^{-2} \\ 101,32 \end{array} \right)_5$$

$$5^0 \cdot 1 + 5^{-1} \cdot 0 + 5^{-2} \cdot 1 + 5^{-1} \cdot 3 + 5^{-2} \cdot 2$$

$$1 + 25 + \frac{3}{5} + \frac{2}{25}$$

(5)

$$26 + \frac{17}{25} \Rightarrow 26 + \frac{68}{100} \Rightarrow 26,68$$

DENEME-1

33. $\frac{\sqrt{72} + \sqrt{32} - \sqrt{18}}{\sqrt{50} - \sqrt{200} + \sqrt{128}} = ?$

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

$$= \frac{6\sqrt{2} + 4\sqrt{2} - 3\sqrt{2}}{5\sqrt{2} - 10\sqrt{2} + 8\sqrt{2}} = \frac{7\sqrt{2}}{3\sqrt{2}} = \frac{7}{3}$$

35. a, b ve c birbirinden farklı asal sayılardır.

$a^2 \cdot b + a \cdot c + 2 \cdot a = 38 \Rightarrow a(a \cdot b + c + 2) = 2 \cdot 19$

olduğuna göre, a + b + c toplamının en büyük değeri kaçtır?

a, b and c are prime numbers which are all different from each other. If $a^2 \cdot b + a \cdot c + 2 \cdot a = 38$, what is the maximum value of a + b + c?

- A) 17 **B) 16** C) 14 D) 13 E) 12

$a \cdot b + c + 2 = 19$

$\Rightarrow 2b + c = 17$

$\begin{matrix} \downarrow & \downarrow \\ 3 & 11 \end{matrix}$

$\Rightarrow a=2, b=3, c=11$

$\Rightarrow a+b+c = 2+3+11 = 16$

34. $\frac{\sqrt[3]{0,001} + \sqrt[3]{0,512} - \sqrt[3]{0,125}}{\sqrt[3]{0,027} - \sqrt[3]{0,008} + \sqrt[3]{0,216}} = ?$

- A) $\frac{3}{7}$ **B) $\frac{4}{7}$** C) $\frac{5}{7}$ D) 1 E) $\frac{9}{7}$

$$= \frac{\frac{1}{10} + \frac{2^3}{10} - \frac{5}{10}}{\frac{3}{10} - \frac{2}{10} + \frac{6}{10}} = \frac{\frac{3}{10}}{\frac{7}{10}} = \frac{3}{7}$$

36. $x + \frac{1}{x-3} = 6$

$\Rightarrow (x-3 + \frac{1}{x-3})^2 = (3)^2$

olduğuna göre, $(x-3)^2 + \frac{1}{(x-3)^2}$ ifadesi kaç eşittir?

$x + \frac{1}{x-3} = 6$ what does mathematical expression

" $(x-3)^2 + \frac{1}{(x-3)^2}$ " equal to?

- A) 11 B) 5 C) 9 D) 13 **E) 7**

$(x-3 + \frac{1}{x-3})^2 = (x-3)^2 + 2 \cdot (x-3) \cdot \frac{1}{x-3} + \frac{1}{(x-3)^2}$

$\Rightarrow 3^2 = (x-3)^2 + 2 + \frac{1}{(x-3)^2}$

$\Rightarrow 7 = (x-3)^2 + \frac{1}{(x-3)^2}$

$$|1 - 2x| + |10x - 5| - |3 - 6x| = 15 \text{ ise } \Sigma x = ?$$

- A) -1 B) 0 C) 1 D) $\frac{3}{2}$ E) 2

$$|2x-1| + 5|2x-1| - 3|2x-1| = 15$$

$$\Rightarrow 3|2x-1| = 15$$

$$\Rightarrow |2x-1| = 5$$

$$2x-1 = -5 \quad \vee \quad 2x-1 = 5$$

$$\Rightarrow 2x = -4 \quad \Rightarrow 2x = 6$$

$$\Rightarrow x_1 = -2 \quad \Rightarrow x_2 = 3$$

$$\Sigma x = -2 + 3 = 1$$

$$(2x - y, x + 2y) = (4, 7) \text{ ise } x \cdot y = ? \quad 3 \cdot 2 = 6$$

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

$$2x - y = 4$$

$$x + 2y = 7 \rightarrow 3 + 2y = 7$$

$$5x = 15$$

$$\Rightarrow x = 3$$

$$\Rightarrow 2y = 4$$

$$\Rightarrow y = 2$$

02040b/

38. $\frac{3x-5}{10}$ kesri bir basit kesir olduğuna göre, x tam

sayısının alabileceği kaç farklı değer vardır?

$\frac{3x-5}{10}$ is a proper fraction, of how many different values can "x" whole number be?

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

$$|3x-5| < 10 \Rightarrow -10 < 3x-5 < 10$$

$$(+5) \Rightarrow -5 < 3x < 15$$

$$\frac{1}{3} \Rightarrow -\frac{5}{3} < x < 5$$

$$\downarrow$$

$$-1, 0, 1, 2, 3, 4$$

6 farklı değer

02010/

40. Rakamları farklı iki basamaklı dört farklı doğal sayının toplamı 108'dir.

Buna göre, bu sayılardan en küçüğü en çok kaçtır?

The sum is 108 for four different two-digit natural numbers and their digits are different (between each natural number only). According to data given, what is the smallest number can be maximum?

- A) 25 B) 27 C) 26 D) 24 E) 28

Bir an hepsi aynı olsun $108 \div 4 = 27$

$$\begin{array}{cccc} 27 & 27 & 27 & 27 \\ \swarrow & \downarrow & \downarrow & \searrow \\ 25 & 26 & 28 & 29 \end{array}$$

020981

$$\frac{2x-1}{x+3} - \frac{x+2}{2x-1} = \frac{x-4}{x+3} \Rightarrow x = ?$$

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

$$\frac{2x-1-(x+2)}{x+3} - \frac{x+2}{2x-1} = 0$$

$$\Rightarrow \frac{x-3}{x+3} = \frac{x+2}{2x-1}$$

$$\Rightarrow \frac{x+3}{x+3} = \frac{x+2}{2x-1}$$

$$\Rightarrow 2x-1 = x+2$$

$$\underline{\underline{x=3}}$$

E) 3

022302

$$x - \sqrt{2x+1} = 1$$

denkleminin çözüm kümesi aşağıdakilerden hangisidir?

- A) ~~{-2, 0}~~ B) ~~{-1, 4}~~ C) {0, 4}
D) {4} E) ~~{-1, -2}~~

$$x - \sqrt{2x+1} = 1 \Rightarrow (x-1) = \sqrt{2x+1}$$

$$\Rightarrow x^2 - 2x + 1 = 2x + 1$$

$$\Rightarrow x^2 - 4x = 0$$

$$\Rightarrow x(x-4) = 0 \Rightarrow \begin{matrix} x=0 \\ x=4 \end{matrix}$$

$$\Rightarrow \underline{\underline{K = \{0, 4\}}}$$

What is the solution set for equation $x - \sqrt{2x+1} = 1$

0-2=0
a=2

022401

42. $P(x) = \frac{(a-2)x^2 - (b+1)x - 3}{(b+2)x + 6}$ polinomu veriliyor.

$P(x)$ polinomu sabit bir polinom olduğuna göre $a \cdot b$ kaçtır?

$$P(x) = \frac{(a-2)x^2 - (b+1)x - 3}{(b+2)x + 6} \text{ is a polynomial.}$$

If $P(x)$ is a constant polynomial, what is $a \cdot b$?

- A) -2 B) -1 C) 0 D) 2 E) 3

$a=2$ ile,

$$P(x) = \frac{-(b+1)x - 3}{(b+2)x + 6} = \frac{-(b+1)\left(x + \frac{3}{b+1}\right)}{(b+2)\left(x + \frac{6}{b+2}\right)}$$

$$P(x) = \frac{-(b+1)}{b+2}$$

sabit polinomu elde edilebilir.

$$\frac{1}{3} = \frac{6}{b+2}$$

$$\Rightarrow 2b+2 = b+2$$

$$\Rightarrow \underline{\underline{b=0}}$$

$$a \cdot b = 2 \cdot 0 = 0$$

022301

44. İçinde 100 adet madeni para bulunan bir kumbarada 50 kuruşluk ve 1 liralık paralar vardır.

Bu kumbaradaki toplam para 70 TL olduğuna göre, 50 kuruşluk paralardan kaç adet vardır?

There are 100 coins in a moneybox and the coins are in 50 kurush and 1 TL. There is total 70 TL of money and how many 50 kurush coins are there in this moneybox?

- A) 55 B) 60 C) 50 D) 70 E) 45

$$\begin{matrix} 50 \text{ krs} & 1 \text{ TL (100 krs)} \\ x \text{ tane} & 100-x \text{ tane} \end{matrix}$$

$$\Rightarrow 50x + 100(100-x) = 7000$$

$$x + 200 - 2x = 140$$

$$200 - 140 = 2x - x$$

$$\underline{\underline{x=60 \text{ adet}}}$$

3,25 sayısı aşağıdakilerden hangisine eşittir?

What does number "3,25" equal to?

- A) $\frac{10}{3}$ B) $\frac{7}{2}$ C) $\frac{11}{5}$ **D) $\frac{13}{4}$** E) $\frac{17}{5}$

$0,25 = \frac{25}{100} = \frac{1}{4} \Rightarrow 3,25 = 3\frac{25}{100} = 3\frac{1}{4} = \frac{13}{4}$

47. $\frac{2^{x-2} \cdot (x^2 - 2x - 8) \cdot (x^2 - 9)}{(x^2 - x - 2) \cdot (x+3)^3} \leq 0$

$x \in \mathbb{N} \Rightarrow \Sigma x = ?$

- A) 6 **B) 7** C) 8 D) 10 E) 11

$(x-2)(x+4)(x-3)(x+3)$

$(x-2)(x+1) \cdot (x+3)^2 \leq 0$
 $x_1 = 2$
 $x_2 = -1$
 $x_3 = 2$
 $x_4 = 3$
 $x \neq -3$!!
 şartıyla $(x+3)^2 > 0$

46. $\sin 165^\circ = ?$

$\sin 165 = ?$

- A) $\frac{\sqrt{6} - \sqrt{2}}{4}$** B) $\frac{\sqrt{6} - \sqrt{3}}{2}$ C) $\frac{\sqrt{3} - \sqrt{2}}{3}$
 D) $\frac{\sqrt{3} - 1}{4}$ E) $\frac{\sqrt{6} - 1}{2}$

$\sin 15^\circ = \sin 45^\circ \cos 30^\circ - \cos 45^\circ \sin 30^\circ$
 $= \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{3}}{2} - \frac{\sqrt{2}}{2} \cdot \frac{1}{2} = \frac{\sqrt{6} - \sqrt{2}}{4}$

48. $6^{\frac{x-1}{n}} = 2 \Rightarrow 27^x = ? = (6)^3 = 216$

- A) 196 **B) 216** C) 220 D) 256 E) 260

$6 \leftarrow 6^{\frac{x}{n}} \cdot 6^{-\frac{1}{n}} = 2$
 $\Rightarrow 6^{-\frac{1}{n}} = \frac{1}{3}$
 $\Rightarrow 6^{\frac{1}{n}} = 3$
 $\Rightarrow 6^{\frac{1}{n}} = 3^1$
 $\Rightarrow (6^{\frac{1}{n}})^x = 3^x$
 $\Rightarrow 6 = 3^x$

49. $A = \{a, \{a, b\}, \{1, 2, c\}, c, b\}$

kümesi için aşağıdakilerden hangisi yanlıştır?

Which one is wrong for the set $A = \{a, \{a, b\}, \{1, 2, c\}, c, b\}$?

- A) $n(A) = 5$ ✓
- B) $\{a, b\} \in A$ ✓
- C) $\{a, b, c\} \subset A$ ✓
- D) $a \in A$ ✓
- E) $\{1, 2, c\} \subset A$ ✗

$\begin{matrix} ? \\ \subset A \\ \downarrow \\ 1 \in A \text{ X} \rightarrow 1 \notin A \\ 2 \in A \text{ X} \rightarrow 2 \notin A \end{matrix}$

logman: $\{1, 2, c\} \in A$ veya $\{1, 2, c\} \subset A$

51. $f(x) = \log_2(x-2) + 1 \Rightarrow f^{-1}(x) = ?$

- A) $2^{x+1} - 2$
- B) $2^{x-1} + 2$ ✗
- C) $2^{x+1} + 2$
- D) $2^{x-1} - 2$
- E) 2^{x+1}

$y = \log_2(x-2) + 1$

$x = \log_2(y-2) + 1$; amaç "y" yi bulmal

$\Rightarrow x-1 = \log_2(y-2)$

$\Rightarrow \log_2 2^{x-1} = \log_2(y-2)$

$\Rightarrow 2^{x-1} = y-2 \Rightarrow y = f^{-1}(x) = 2^{x-1} + 2$

022601

50. $y \in \mathbb{Z}, x \geq x^2$

$2x - 3y = 6 \Rightarrow \Sigma y = ?$

- A) 3
- B) 2
- C) 0
- D) -2
- E) -3 ✗

$2x - 6 = 3y$
 $\hookrightarrow \frac{2x-6}{3} = y$

$0 \geq x^2 - x$
 $\Rightarrow 0 \geq x(x-1)$
 $x_1 = 0, x_2 = 1$
 $-\infty \quad 0 \quad 1 \quad +\infty$
 $+ \quad - \quad +$
maka

$0 \leq x \leq 1$
(2) $\hookrightarrow 0 \leq 2x \leq 2$
 $-6 \Rightarrow -6 \leq 2x-6 \leq -4$
 $\cdot \frac{1}{3} \Rightarrow -2 \leq \frac{2x-6}{3} \leq -\frac{4}{3}$
 $\Rightarrow -2 \leq y \leq -\frac{4}{3}$

$y = -2, -1$

$\hookrightarrow \Sigma y = -2-1 = -3$

$i^1 = i, i^3 = -i, i^5 = i, i^7 = -i, i^9 = i, i^{11} = -i, i^{13} = i, i^{15} = -i$
 $i^2 = -1, i^4 = 1, i^6 = -1, i^8 = 1, i^{10} = -1, i^{12} = 1, i^{14} = -1, i^{16} = 1$

52. $P(x) = 2x^{15} - 3x^{12} - x^9 + 2x^5 + 4x^2 + x - 1$ polinomu veriliyor.

Buna göre $P(-i)$ kaçtır?

What is $P(-i)$ for the polynomial $P(x) = 2x^{15} - 3x^{12} - x^9 + 2x^5 + 4x^2 + x - 1$?

- A) -8 ✗
- B) $i-8$
- C) $8-i$
- D) i
- E) $i+8$

$P(-i) = 2(-i)^{15} - 3(-i)^{12} - (-i)^9 + 2(-i)^5 + 4(-i)^2 - (-i) - 1$
 $= 2(-i) \cdot (-i) - 3 \cdot 1 - (-i) + 2(-i) + 4(-1) - (-i) - 1$
 $= -2i - 3 + i - 2i - 4 + i - 1$
 $= -8$

53. $Z = 5 + 12i$ karmaşık sayısının kökleri Z_1 ve Z_2 dir.

Buna göre $|Z_1 - Z_2|$ kaçtır? $Z = (x+iy)^2$ olsun

Z_1 and Z_2 are the roots of the complex number $Z = 5 + 12i$. According to data given, what is $|Z_1 - Z_2|$

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

$$(x+iy)^2 = x^2 - y^2 + 2xyi = 5 + 12i$$

$$x^2 - y^2 = 5$$

$$2xy = 12 \Rightarrow y = \frac{6}{x}$$

$$\Rightarrow x^2 - \left(\frac{6}{x}\right)^2 = 5 = 0$$

$$\Rightarrow x^4 - 5x^2 - 36 = 0 \rightarrow x^2 + 4 = 0 \rightarrow x \notin \mathbb{R}$$

$$-9 + 4 \rightarrow x^2 - 9 = 0 \rightarrow x_1 = -3 \rightarrow y_1 = \frac{6}{-3} = -2$$

$$\rightarrow x_2 = 3 \rightarrow y_2 = \frac{6}{3} = 2$$

$$\Rightarrow z_1 = -3 - 2i, z_2 = 3 + 2i$$

$$\Rightarrow |z_1 - z_2|^2 = (3 - (-3))^2 + (2 - (-2))^2 = 36 + 16 = 52$$

$$\Rightarrow |z_1 - z_2| = \sqrt{52} = 2\sqrt{13}$$

02280103

54. $124470'' = x^\circ y' z'' \Rightarrow x + y - z = ? = 34 + 34 - 30 = 38$

- A) 34 B) 38 C) 40 D) 44 E) 48

124470 3600	2070 60
10800 34°	180 34'
16470	270
14400	240
2070	30''

$$124470'' = 34^\circ 34' 30''$$

$\downarrow \quad \downarrow \quad \downarrow$
 $x \quad y \quad z$

55. $\log_2(-2 + \log_3(5x+1)) = 1 \Rightarrow x = ?$

- A) 14 B) 15 C) 16 D) 17 E) 18

$$\Rightarrow -2 + \log_3(5x+1) = 2$$

$$\Rightarrow \log_3(5x+1) = 4 = \log_3 81$$

$$5x+1 = 81$$

$$5x = 80 \Rightarrow x = 16$$

023006

56. $x \Delta x^{-1} = e$

$$x \Delta y = 3x - 3y + 2xy - 3 \Rightarrow 5^{-1} = ?$$

- A) $\frac{10}{7}$ B) $\frac{5}{7}$ C) $-\frac{5}{7}$

D) $-\frac{10}{7}$

E) $-\frac{13}{7}$

$$i. x \Delta e = x$$

$$ii. x \Delta x^{-1} = e$$

$$x \Delta e = 3x - 3e + 2xe - 3 = x$$

$$\Rightarrow 2x + 2xe - 3e - 3 = 0$$

$$\Rightarrow 2x(1+e) - 3(e+1) = 0$$

$$\Rightarrow (1+e)(2x-3) = 0$$

$$e+1=0 \Rightarrow e=-1$$

$$5 \Delta 5^{-1} = -1 \text{ dmal}$$

$$\Rightarrow 3.5 - 3.5^{-1} + 2.5.5^{-1} - 3 = -1$$

$$\Rightarrow 15 - 3.5^{-1} + 10.5^{-1} - 3 = -1$$

$$\Rightarrow 7.5^{-1} + 12 = -1$$

$$\Rightarrow 7.5^{-1} = -13$$

$$\Rightarrow 5^{-1} = -\frac{13}{7}$$

0231 57. $\prod_{k=2}^4 \left(\sum_{m=3}^5 (k+m-1) \right) \equiv x \pmod{8} \Rightarrow x = ?$

A) 3 B) 4 C) 5 **D) 6** E) 0

$\sum_{m=3}^5 m + \sum_{m=3}^5 (k-1)$
 $= 3+4+5 + 3(k-1)$
 $= 3k+9$

$\prod_{k=2}^4 (3k+9) = 15 \cdot 18 \cdot 21$
 $k=2$
 $\equiv 7 \cdot 2 \cdot 5 \pmod{8}$
 $\equiv \underline{6} \pmod{8}$

59. $\text{sgn}(x-2) + \text{sgn}(x+3) = 0 \Rightarrow \text{Ç. K (SS)} = ?$

02330202

A) (-3, 2) B) (-2, 3) C) (-3, 0)
 D) (-2, 2) E) (-3, 1)

$0+0=0$ olabilir
 $x=2 \wedge x=-3$

$-1+1=0$ olabilir
 $x-2 < 0 \wedge x+3 > 0 \Rightarrow x < 2 \wedge x > -3 \Rightarrow -3 < x < 2$

$1+(-1)=0$ olabilir
 $x-2 > 0 \wedge x+3 < 0 \Rightarrow x > 2 \wedge x < -3$

022002 58. 7 farklı oyuncak 3 kardeşe, her birine ikiye oyuncak vermek koşuluyla kaç farklı şekilde verilebilir?

In how many different ways can three toys be given to three siblings (two for each)?

A) 680 B) 660 C) 650 **D) 630** E) 600

$= \binom{7}{2} \cdot \binom{5}{2} \cdot \binom{3}{2}$
 $= 21 \cdot 10 \cdot 3$
 $= \underline{630}$

02340701 CEVAP: -6 ✓✓

60. $a, b \in \mathbb{R}$
 $\lim_{x \rightarrow 2} \frac{x^2 + (a+3)x - 8}{x-2} = b \Rightarrow a \cdot b = ? = (-1) \cdot (6) = \underline{-6}$

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

$\Rightarrow 2^2 + 2(a+3) - 8 = 0$
 $\Rightarrow 2(a+3) = 4$
 $\Rightarrow a = -1$

Qu $\frac{x^2 + 2x - 8}{x-2} = \frac{(x-2)(x+4)}{x-2} = 6$

02340701

$\lim_{x \rightarrow 0} \frac{\sin 3x \cdot \tan 4x}{5x^2} = ?$ $\lim_{x \rightarrow 0} \frac{\sin 3x}{3x} \cdot \lim_{x \rightarrow 0} \frac{\tan 4x}{x}$

- A) $\frac{12}{5}$ B) $\frac{7}{5}$ C) $\frac{12}{25}$ D) $\frac{8}{5}$ E) $\frac{7}{25}$
- $= \frac{3}{5} \cdot \frac{4}{1} = \frac{12}{5}$

02350217

$x = t^2 + 2t + 3$
 $y = t^3 + t - 1$ $\Rightarrow \frac{d^2y}{dx^2} \Big|_{t=1} = ?$

- A) $\frac{3}{8}$ B) $\frac{1}{4}$ C) $\frac{7}{12}$ D) $\frac{9}{16}$ E) $\frac{11}{8}$

$\frac{dy}{dx} = \frac{dy}{dt} \cdot \frac{dt}{dx} = (3t^2 + 1) \cdot \frac{1}{2t+2} = \frac{3t^2+1}{2t+2}$

$\frac{d^2y}{dx^2} = \frac{d}{dx} \left(\frac{dy}{dx} \right)$

$\frac{d}{dt} \left[\frac{3t^2+1}{2t+2} \right] \cdot \frac{dt}{dx} = \frac{6t(2t+2) - 2(3t^2+1)}{(2t+2)^2} \cdot \frac{1}{2t+2}$

$= \frac{6t^2+12t-2}{(2t+2)^3} \Big|_{t=1} = \frac{6+12-2}{4^3} = \frac{16}{4^3} = \frac{1}{4}$

023501

62. $f(x) - f'(x) = 2x^2 - 3x + 5 \rightarrow f(x)$: II derece olduğuna göre $f'(5) - f(2)$ kaçtır?

What is $f'(5) - f(2)$ if $f(x) - f'(x) = 2x^2 - 3x + 5$?

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

$f(x) = ax^2 + bx + c$
 $f'(x) = 2ax + b$

$ax^2 + (b-2a)x + c-b = 2x^2 - 3x + 5$

$a=2 \wedge b-2a=-3 \wedge c-b=5$
 $\Rightarrow b-4=-3 \Rightarrow c-1=5$
 $\Rightarrow b=1 \Rightarrow c=6$

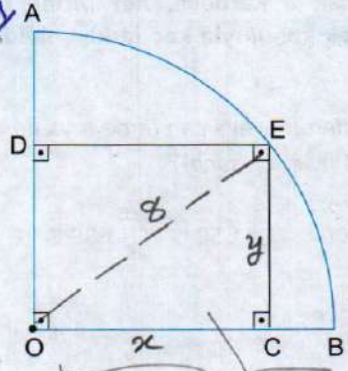
$f(x) = 2x^2 + x + 6 \Rightarrow f'(x) = 4x + 1$

$f(2) = 2 \cdot 2^2 + 2 + 6 = 16$
 $f'(5) = 4 \cdot 5 + 1 = 21$

$\Rightarrow f'(5) - f(2) = 21 - 16 = 5$

02350201

$A(OECD) = x \cdot y = x \cdot \sqrt{64-x^2} \Rightarrow A'_{\text{Alan}} = 0$
 $\Rightarrow A'_{\text{Alan}} = 1 \cdot \sqrt{64-x^2} + x \cdot \frac{-2x}{2\sqrt{64-x^2}} = 0$



Yandaki şekilde merkezi O, yarıçapı $|OA| = |OB| = 8$ br olan dörtte bir çember yayı üzerindeki E noktasından yarıçaplara inen dikme ayakları C ve D'dir.

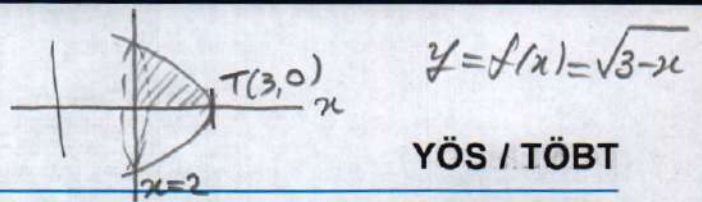
Buna göre OECD dikdörtgeninin alanı en çok kaç br^2 dir?

In the figure, "C" and "D" are perpendicular lines, drawn from "E" point to the radii on a quadrant with a $|OA| = |OB| = 8$ radius. According to data given, how many units is the area of "OECD" rectangle most?

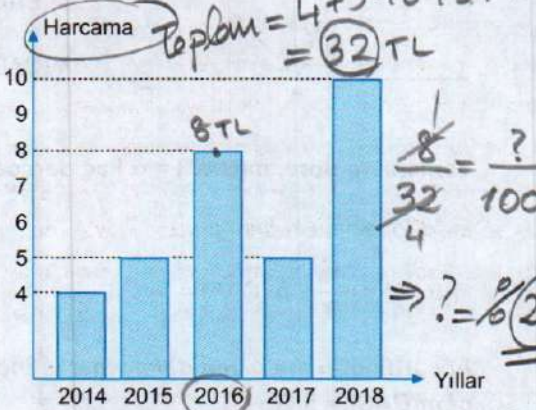
- A) 20 B) 24 C) 28 D) 32 E) 36

$\sqrt{64-x^2} = \frac{x^2}{\sqrt{64-x^2}} \Rightarrow x^2 = 64-x^2$
 $\Rightarrow 2x^2 = 64$
 $\Rightarrow x^2 = 32$

$\text{Alan}_{\text{max}} = x \cdot y = 4\sqrt{2} \cdot 4\sqrt{2} = 32$
 $x = 4\sqrt{2} \rightarrow y = 4\sqrt{2}$



65. Aşağıdaki grafik bir ülkenin 2014-2018 yılları arasında teknoloji altyapısı için yaptığı harcamaları milyon dolar olarak göstermektedir.



Buna göre, 2016 yılında yapılan harcama bu beş yıldaki toplam harcamanın yüzde kaçır?

In the graph below, expenses of a country on technology are shown in million dollars. According to the data given, what is the percentage of expenses in 2016 in the total expenses?

- A) 40 B) 35 C) 30 **D) 25** E) 20

67. $y^2 = 3 - x$ eğrisi ile $x = 2$ doğrusu arasında kalan bölgenin x -ekseni etrafında 360° döndürülmesi ile oluşan cismin hacmi kaç π birim küptür?

How many π unit cubes is the object we get by rotating 360° the area between the curve " $y^2 = 3 - x$ " and line " $x = 2$ " in the " x " axis?

- A) $\frac{\pi}{2}$** B) $\frac{\pi}{3}$ C) $\frac{\pi}{4}$ D) $\frac{3\pi}{2}$ E) 2π

$$V = \pi \int_2^3 f^2(x) dx = \pi \int_2^3 (\sqrt{3-x})^2 dx$$

$$= \pi \int_2^3 (3-x) dx = \pi \left(3x - \frac{x^2}{2} \right)_2^3$$

$$= \pi \left[3(3-2) - \frac{1}{2}(3^2-2^2) \right] = \pi \cdot \left(3 - \frac{5}{2} \right)$$

$$= \left(\frac{\pi}{2} \right) \text{ birim}^3$$

Asal hoşegene göre simetrik olmalıdır

66. $\int_{-1}^1 e^{x^2-x} \cdot (4x-2) dx = ?$ $\hookrightarrow (2x-1) du = du$

- A) $2 - e^2$ **B) $2 \cdot (1 - e^2)$** C) $2 \cdot (1 + e^2)$
D) $2 + e^2$ E) $2e^2$

$$= 2 \cdot \int e^u du$$

$$= 2 e^u \Big|_{-1}^1$$

$$= 2 e^{x^2-x} \Big|_{-1}^1$$

$$= 2 \left[e^{1-1} - e^{1-(-1)} \right]$$

$$= 2 \cdot (e^0 - e^2)$$

$$= 2 \cdot (1 - e^2)$$

68. $A^T = A$ olan matrislere "simetrik matris" denir.

Buna göre aşağıdaki matrislerden hangisi simetrik matristir?

$A^T = A$ matrices are called "symmetric matrices". According to this, which one is a symmetric matrix?

- A) $\begin{bmatrix} 2 & 1 & 3 \\ 1 & 0 & 2 \\ 3 & -2 & 4 \end{bmatrix}$ B) $\begin{bmatrix} -1 & 2 & 3 \\ 2 & 5 & 0 \\ -3 & 0 & 1 \end{bmatrix}$
C) $\begin{bmatrix} 4 & -1 & 0 \\ -1 & 2 & 3 \\ 0 & 3 & -5 \end{bmatrix}$ D) $\begin{bmatrix} -2 & 0 & 1 \\ 0 & 3 & -2 \\ 1 & 2 & 5 \end{bmatrix}$
E) $\begin{bmatrix} 3 & 1 & 2 \\ 1 & 5 & 7 \\ 2 & 3 & 3 \end{bmatrix}$

020903

69. $x - 2y + z = 0$
 $(k + 1)x + y - 2z = 0$
 $-2x + 3y + 2z = 0$

Kat sayılarla belirlenir

$$\begin{vmatrix} 1 & -2 & 1 \\ k+1 & 1 & -2 \\ -2 & 3 & 2 \end{vmatrix} = 0$$

denkleminin sonsuz çözümü olduğuna göre k'nın değeri kaçtır?

The system of equations

$x - 2y + z = 0$
 $(k + 1)x + y - 2z = 0$
 $-2x + 3y + 2z = 0$

has infinite solutions. What is the value of "k" according to this data given?

- A) $\frac{8}{7}$ B) $\frac{3}{5}$ C) -1 D) $-\frac{9}{7}$ E) $-\frac{6}{7}$

$$\begin{vmatrix} 1 & -2 & 1 \\ k+1 & 1 & -2 \\ -2 & 3 & 2 \end{vmatrix} =$$

1. satıra göre açalım:

$$= 1 \cdot (-1)^{1+1} \cdot \begin{vmatrix} 1 & -2 \\ -2 & 2 \end{vmatrix} + (-2) \cdot (-1)^{1+2} \cdot \begin{vmatrix} k+1 & -2 \\ -2 & 2 \end{vmatrix} + 1 \cdot (-1)^{1+3} \cdot \begin{vmatrix} k+1 & 1 \\ -2 & 3 \end{vmatrix}$$

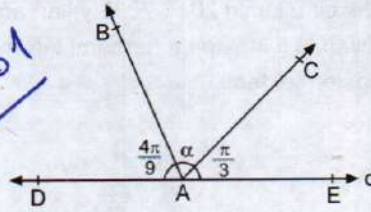
$$= 2 - (-6) + 2 \cdot (2k + 2 - 4) + 3k + 3 - (-2)$$

$$= 8 + 4k - 4 + 3k + 5$$

$$= 7k + 9 \rightarrow 7k + 9 = 0 \Rightarrow k = -\frac{9}{7}$$

olmalıdır ki, sistemin sonsuz adet çözümü sahip olur.

71.



Şekildeki d doğrusunda
 $m(\widehat{BAD}) = \frac{4\pi}{9}$
 $m(\widehat{CAE}) = \frac{\pi}{3}$

Verilenlere göre, $m(\widehat{BAC}) = \alpha$ kaç derecedir?

In "d" direction in the figure,

$$m(\widehat{BAD}) = \frac{4\pi}{9}, m(\widehat{CAE}) = \frac{\pi}{3}$$

According to the given data, what is the angle of $m(\widehat{BAC}) = \alpha$?

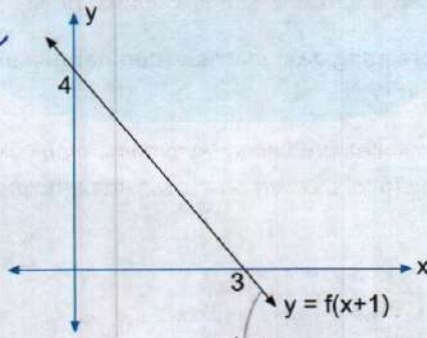
- A) 40 B) 50 C) 60 D) 70 E) 80

$$\alpha + \frac{4\pi}{9} + \frac{\pi}{3} = \pi \Rightarrow \alpha = \frac{9\pi - 7\pi}{9} = \frac{2\pi}{9}$$

$$\Rightarrow \alpha = \frac{2 \cdot 180^\circ}{9} = 40^\circ$$

021604

70.



$f(-2) = ?$

- A) 8 B) 6 C) 4 D) -2 E) -4

$$\Rightarrow 4x + 3y = 12$$

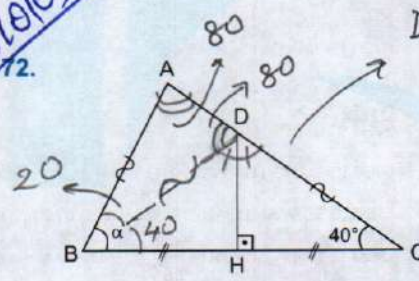
$$\Rightarrow y = \frac{4}{3}x + 4$$

$$\Rightarrow f(x+1) = \frac{4}{3}x + 4$$

$$x = -3 \Rightarrow f(-2) = \frac{4}{3} \cdot (-3) + 4 = 4 - 4 = 0$$

020105

72.



$\triangle DBC$ ikizkenar

ABC bir üçgen
 $[DH] \perp [BC]$
 $|AB| = |CD|$
 $|BH| = |HC|$
 $m(\widehat{BCA}) = 40^\circ$

Verilenlere göre, $m(\widehat{ABC}) = \alpha$ kaç derecedir?

ABC is a triangle and, $[DH] \perp [BC]$, $|AB| = |CD|$
 $|BH| = |HC|$, $m(\widehat{BCA}) = 40^\circ$

According to the data given, what is the angle of $m(\widehat{ABC}) = \alpha$?

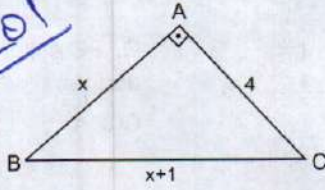
- A) 40 B) 45 C) 50 D) 60 E) 65

$$\alpha = 20^\circ + 40^\circ = 60^\circ$$

DENEME-1

YÖS / TÖBT

73. 03010201



$[AB] \perp [AC]$
 $|AB| = x \text{ cm}$
 $|AC| = 4 \text{ cm}$
 $|BC| = (x + 1) \text{ cm}$

Verilenlere göre, ABC üçgeninin çevresi kaç br dir?

According to the data given, how many units is the perimeter of the triangle?

- A) 12 B) 15 C) 18 **D) 20** E) 21

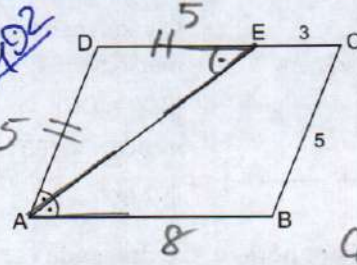
$$x^2 + 4^2 = (x+1)^2 \Rightarrow x^2 + 16 = x^2 + 2x + 1$$

$$\Rightarrow x = 15/2$$

$$C(\triangle ABC) = x + x + 1 + 4$$

$$= 2x + 5 = 15 + 5 = \underline{\underline{20 \text{ br}}}$$

75. 03020492



ABCD paralelkenar
 $[AE]$ açıortay
 $|EC| = 3 \text{ cm}$
 $|BC| = 5 \text{ cm}$

Verilenlere göre, Çevre(ABCD) kaç cm'dir?

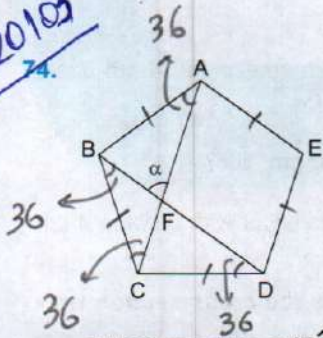
ABCD is a parallelogram, $[AE]$ is an angle bisector $|EC| = 3 \text{ cm}$ and $|BC| = 5 \text{ cm}$.

According to the data given, how many cm is the perimeter of (ABCD) ?

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

$$C = 2(5+8) = \underline{\underline{26 \text{ br}}}$$

74. 03020103



ABCDE düzgün beşgen
 $[AC]$ ve $[BD]$ köşegen

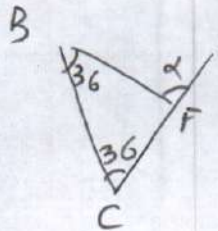
$$\frac{360}{5} = 72^\circ$$

olduğuna göre, $m(\widehat{BFA}) = \alpha$ kaç derecedir?

ABCDE is a regular pentagon, $[AC]$ and $[BD]$ are diagonals of it.

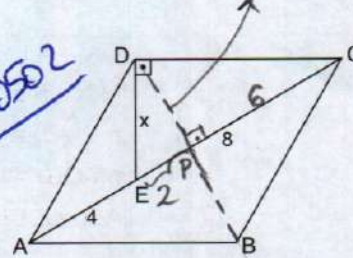
What is the angle of $m(\widehat{BFA}) = \alpha$?

- A) 18 B) 36 C) 48 D) 54 **E) 72**



$$\alpha = 36^\circ + 36^\circ = \underline{\underline{72^\circ}}$$

76. 03020502



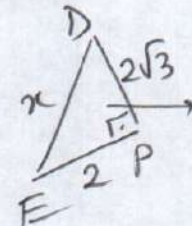
ABCD eşkenar dörtgen
 $[ED] \perp [CD]$
 $|AE| = 4 \text{ cm}$
 $|EC| = 8 \text{ cm}$

Verilenlere göre, $|DE| = x$ kaç cm'dir?

ABCD is a rhombus, $[ED] \perp [CD]$, $|AE| = 4 \text{ cm}$ and $|EC| = 8 \text{ cm}$.

According to the data given, How many cm is $|DE|$ (x) ?

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



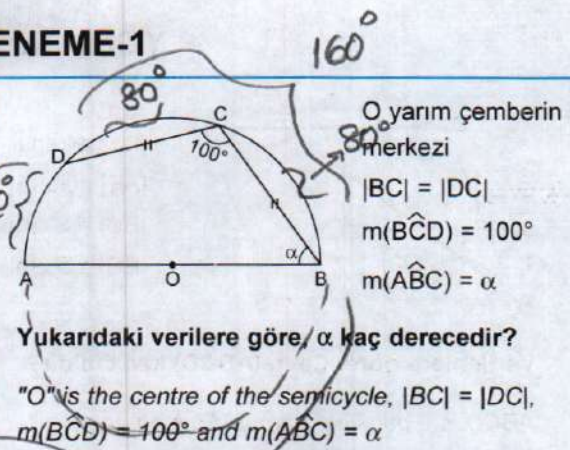
$$x^2 = 2^2 + (2\sqrt{3})^2$$

$$= 4 + 12 = 16$$

$$\Rightarrow \underline{\underline{x = 4}}$$

77.

030301



Yukarıdaki verilere göre, α kaç derecedir?

"O" is the centre of the semicycle, $|BC| = |DC|$,
 $m(\widehat{BCD}) = 100^\circ$ and $m(\widehat{ABC}) = \alpha$

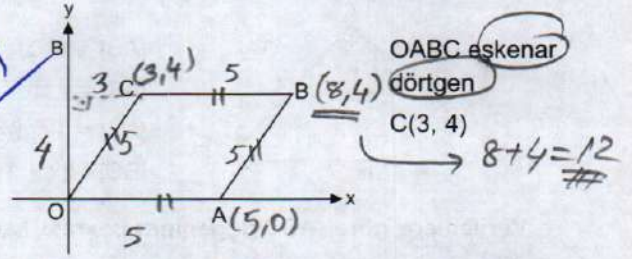
200 According to the data given above, what is the angle of α ?

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

$$\alpha = \frac{20 + 80}{2} = 50^\circ$$

79.

0050101



Verilenlere göre, B köşesinin koordinatları toplamı kaçtır?

OABC is a rhombus, $C(3, 4)$.

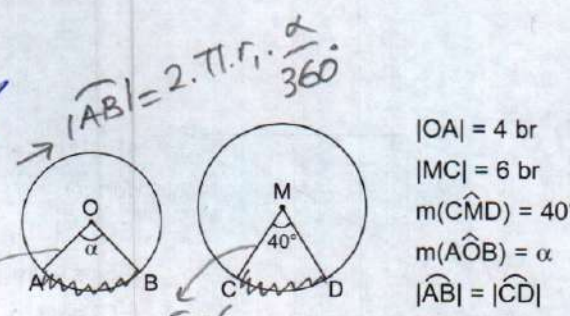
According to the data given, what is the sum of the coordinates of corner "B" ?

- A) 8 B) 10 C) 12 D) 15 E) 16

$$8 + 4 = 12$$

78.

030301



Verilenlere göre, α kaç derecedir?

$|OA| = 4$ units, $|MC| = 6$ units, $m(\widehat{CMD}) = 40^\circ$,
 $m(\widehat{AOB}) = \alpha$ and $|\widehat{AB}| = |\widehat{CD}|$

According to the data given, what is the angle of α ?

- A) 60 B) 80 C) 90 D) 110 E) 120

$$|\widehat{CD}| = 2\pi r \cdot \frac{40}{360} = 2\pi \cdot 6 \cdot \frac{40}{360} = \frac{4\pi}{3} \text{ br}$$

$$|\widehat{AB}| = |\widehat{CD}| \Rightarrow \frac{4\pi}{3} = 2\pi \cdot 4 \cdot \frac{\alpha}{360}$$

$$\Rightarrow \frac{360}{2 \cdot 3} = \alpha$$

$$\Rightarrow \alpha = 60^\circ$$

80.

030302

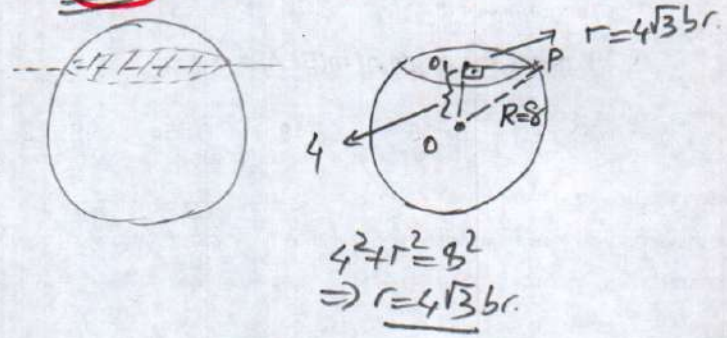
Yarıçapı 8 cm olan küre merkezinden 4 cm uzaklığında bir düzlemlle kesiliyor.

Oluşan kesitin alanı kaç cm^2 dir?

A sphere of a 8 cm radius is cut with a plane 4 cm from its centre.

How many square cm is the cross section we get in that case?

- A) 48π B) 36π C) 32π D) 24π E) 16π



Kesitin yarıçapı: $r = 4\sqrt{3}$ br.
 Kesit bir daire dir. Alanı: πr^2 dir
 $= \pi (4\sqrt{3})^2$
 $= 48\pi \text{ br}^2$

