

# ANKARA ÜNİVERSİTESİ YÖS 2020

***IQ :***

1.

$A, B, C, D \in \mathbb{Z}^+ \Rightarrow A+B+C+D=?$

Select one:

- 20
- 14
- 11
- 16
- 12

2.

Select one:

- 15
- 14
- 42
- 21
- 17

3.

$xyx \rightarrow 4357 \rightarrow ypx \rightarrow 6447 \rightarrow ypx \rightarrow 2468$   
 $pxy \rightarrow 4635$   
 $pnx \rightarrow ?$

Lütfen birini seçin:

- 3777
- 3677
- 5784
- 5684
- 5767

4.

1	2
3	4

10	-10
-10	10

3	5
5	1

4	7
3	6

2	?
4	6

Select one:

- 5
- 8
- 9
- 7
- 6

5.

Select one:

- 
- 
- 
- 
-

6.

A	B	B	B	B	B	B
B	A	A	A	B	B	B
A	A	A	A	A	B	B
B	B	A	A	A	A	A
A	A	A	B	B	B	B
?	?	?	?	?	?	?

Select one:

- |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| B | B | A | B | B | B | B |
|---|---|---|---|---|---|---|
- |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| B | B | B | A | B | B | B |
|---|---|---|---|---|---|---|
- |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| B | B | B | B | A | A | A |
|---|---|---|---|---|---|---|
- |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| B | A | A | A | B | B | B |
|---|---|---|---|---|---|---|
- |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| B | B | A | A | B | B | B |
|---|---|---|---|---|---|---|

7.

I		II		III	
6	52	12	11	3	21
32	8	16	6	24	?

Select one:

- 27
- 36
- 18
- 9
- 38

8.

2	→	11	→	38	→	119	→	?
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Select one:

- 289
- 362
- 352
- 170
- 395

9.

I		II		III	
6	52	12	11	3	21
32	8	16	6	24	?

Select one:

- 38
- 9
- 18
- 27
- 36

10.

Select one:

- 2
- 3
- 9
- 5
- 8

11.

Select one:

- 342
- 182
- 296
- 90
- 70

12.

Select one:

- 41
- 58
- 33
- 43
- 47

13.

Lütfen birini seçin:

- 12:58
- 12:23
- 13:23
- 13:28
- 13:13

14.


21	35	56	C
D	1	2	B
E	5	3	238
1631	A	623	385


⇒ B - E = ?


Select one:

- 82
- 139
- 225
- 113
- 134

15.






I. 

II. 


III. 

Teraziler dengededir. (Scales are in balance.)

Lütfen birini seçin:

- 
- 
- 
- 
- 

16.

<table border="0" style="width: 100%;"> <tr><td style="width: 50%;">9586</td><td style="width: 50%;">7515</td></tr> <tr><td>2713</td><td>4229</td></tr> </table>	9586	7515	2713	4229	=9786	=7529			
9586	7515								
2713	4229								
<table border="0" style="width: 100%;"> <tr><td style="width: 50%;">1536</td><td style="width: 50%;">6617</td></tr> <tr><td>2740</td><td>7382</td></tr> </table>	1536	6617	2740	7382	=1530	=6312			
1536	6617								
2740	7382								
									
<div style="border: 1px solid black; border-radius: 50%; width: 150px; height: 150px; margin: 0 auto; display: flex; flex-direction: column; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <table border="0" style="width: 100%;"> <tr><td style="width: 50%;">6910</td><td style="width: 50%;">8707</td></tr> <tr><td>6035</td><td>9213</td></tr> </table> </div> <div style="border: 1px solid black; padding: 5px;"> <table border="0" style="width: 100%;"> <tr><td style="width: 50%;">6035</td><td style="width: 50%;">9213</td></tr> </table> </div> </div>			6910	8707	6035	9213	6035	9213	=????
6910	8707								
6035	9213								
6035	9213								

Select one:

- 6033
- 6903
- 8215
- 8700
- 9010

17.

7582 → 4  
9587 → 2  
1862 → 8  
4285 → 1  
3652 → ?

Select one:

- 3
- 5
- 7
- 6
- 2

18.

21	35	56	C
D	1	2	B
E	5	3	238
1631	A	623	385

⇒ B - E = ?

Select one:

- 139
- 225
- 113
- 134
- 82

19.

08:30    04:10    05:40

↓            ↓            ↓

75           65           ?

Select one:

- 60
- 110
- 70
- 80
- 75

20.

Select one:

- 6
- 4
- 0
- 8

21.

$2 \blacktriangle 3 \blacksquare 5 \bullet 2 = 20$

$3 \blacktriangle 2 \blacksquare 10 \bullet 9 = 10$

$5 \blacktriangle 3 \blacksquare 6 \bullet 25 = ?$

Select one:

- 15
- 25
- 30
- 20
- 10

22.

Döndürülmüş şekli bulunuz (*Find the rotated one.*)

Select one:

- 
- 
- 
-



23.

Lütfen birini seçin:

- 20
- 48
- 28
- 36
- 32

24.

	→	<b>33</b>
	→	<b>12</b>
	→	<b>?</b>

Select one:

- 16
- 24
- 18
- 20
- 12

25.

0			3
	0		2
-2			
		?	0

Select one:

- 0
- 3
- 1
- 2
- 1

26.

15  $\xrightarrow{+3}$  5  $\xleftarrow{+2}$  3  $\xrightarrow{\times 2}$  6

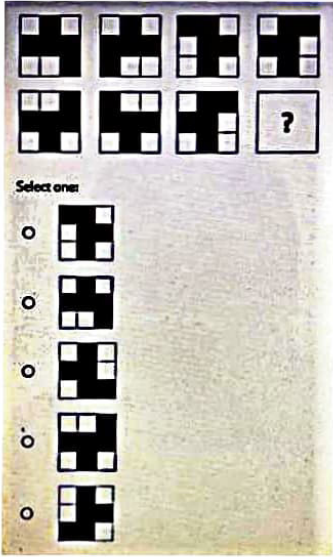
Blank  $\xrightarrow{+3}$  Blank  $\xleftarrow{+3}$  Blank  $\xrightarrow{\times 2}$  ?

Blank  $\xleftarrow{+2}$  ?

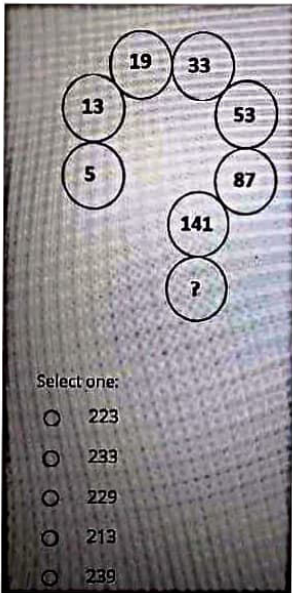
Select one:

- 14
- 7
- 20
- 22
- 15

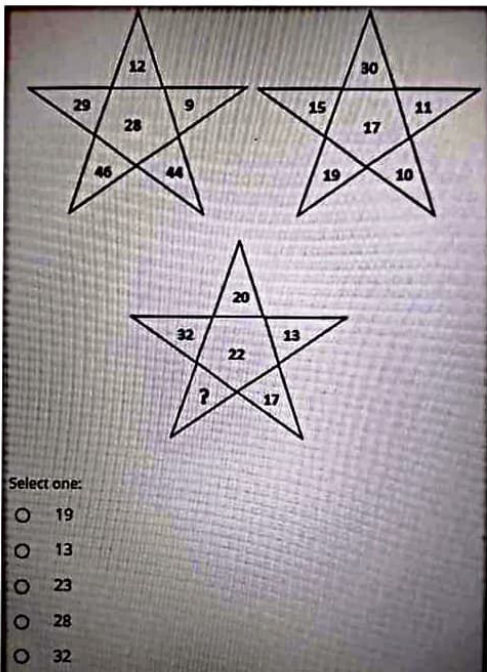
27.



28.



29.



30.

9	2	4	4	?
6	7	7	5	?

Select one:

- |   |
|---|
| 7 |
| 5 |
- |   |
|---|
| 3 |
| 8 |
- |   |
|---|
| 9 |
| 4 |
- |   |
|---|
| 2 |
| 1 |
- |   |
|---|
| 1 |
| 2 |

31.

Select one:

- 112

32.

33.

		?

Select one:

- 
- 
- 
- 
- 

34.

I

II

III

IV

Select one:

- 12
- 9
- 7
- 8
- 5

35.

The puzzle consists of a 4x4 grid of symbols on the left and a 2x2 grid of numbers on the right. Arrows point from the 4x4 grid to the 2x2 grid. Below the 4x4 grid is a sequence of symbols: a pentagon, a diagonal slash, a square, and a circle, followed by an equals sign and a question mark.

4x4 Grid of Symbols:

△	☆	↘	△
●	⬠	⤵	⬠
⤵	△	↘	●
☆	▲	⬠	⬠

2x2 Grid of Numbers:

4152	8679
2349	1851

Symbol Sequence: ⬠ ↘ ⬠ ● = ?

Lütfen birini seçin:

- 3592
- 3692
- 5392
- 3491
- 2591

36.

The puzzle consists of a 3x3 grid of symbols on the left, a 3x3 grid of symbols in the middle, and a 3x3 grid of symbols on the right. Arrows indicate a sequence from left to middle to right. Below the 3x3 grids is a question mark and a 3x3 grid of symbols.

3x3 Grid 1 (Left):

☆	△	⬠
●	⬠	↘
⊕	◇	→

3x3 Grid 2 (Middle):

●	→	△
⊕	⬠	⬠
◇	☆	↘

3x3 Grid 3 (Right):

⊕	↘	→
◇	⬠	△
☆	●	⬠

? →

Select one:

- |   |   |   |
|---|---|---|
| ● | ↘ | ☆ |
| ⬠ | ⬠ | △ |
| → | ◇ | ⊕ |
- |   |   |   |
|---|---|---|
| ◇ | ⬠ | ↘ |
| ☆ | ⬠ | → |
| ● | ⊕ | △ |
- |   |   |   |
|---|---|---|
| △ | ☆ | ↘ |
| ⊕ | ⬠ | → |
| ● | ⬠ | ◇ |
- |   |   |   |
|---|---|---|
| ☆ | △ | ⬠ |
| ● | ⬠ | ↘ |
| ⊕ | ◇ | → |
- |   |   |   |
|---|---|---|
| → | △ | ⊕ |
| ◇ | ⬠ | ⬠ |
| ☆ | ● | ↘ |

37.

$2$   
||  
A : B = 4  
-  $\square$  x  
24 = D + C  
||  
30

$\Rightarrow A+B+C+D=?$

A B C D E

Select one:

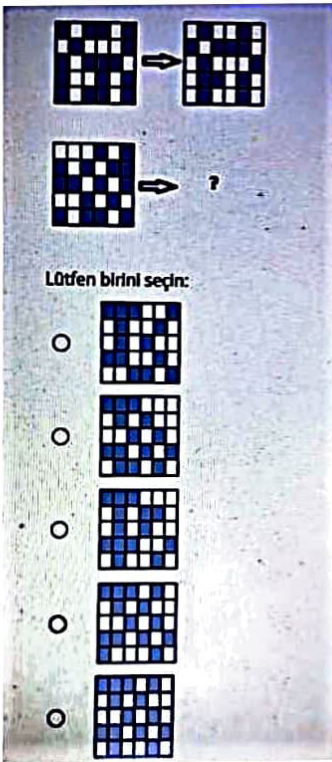
- 45
- 39
- 59
- 47
- 54

38.

Tüm ağırlıklar pozitif tamsayıdır.  
(All weights are positive integer.)

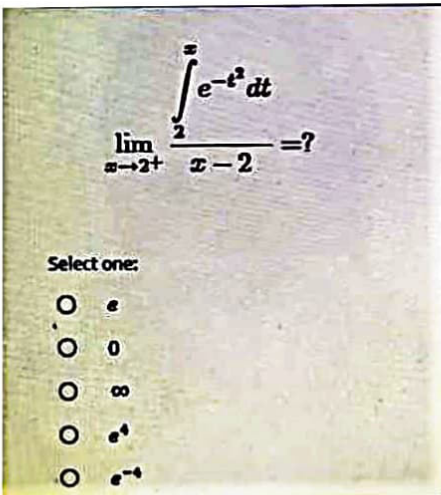
$\min(X) = ?\text{gr}$

39.

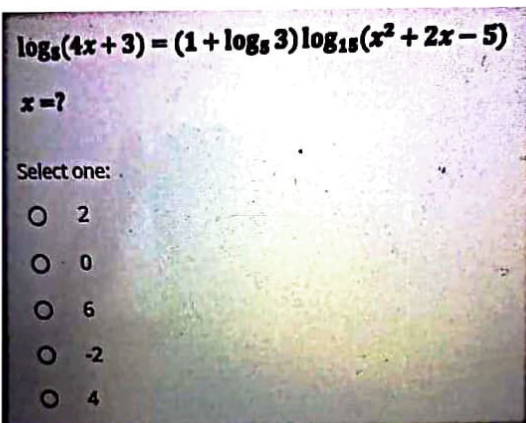


**MATH:**

40.

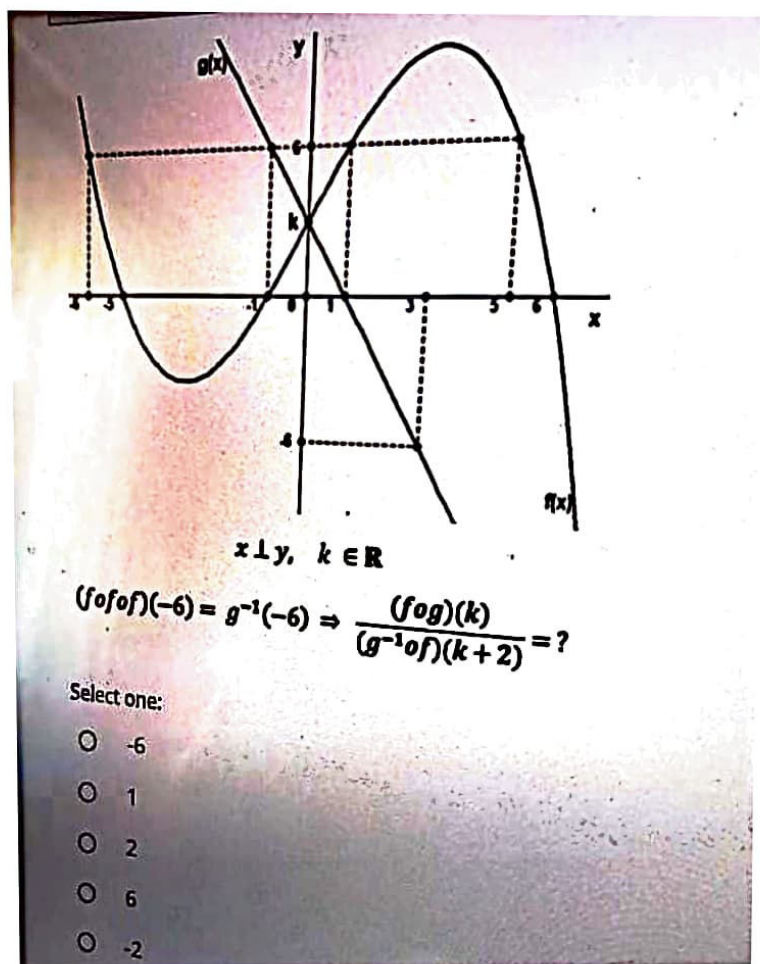


41.

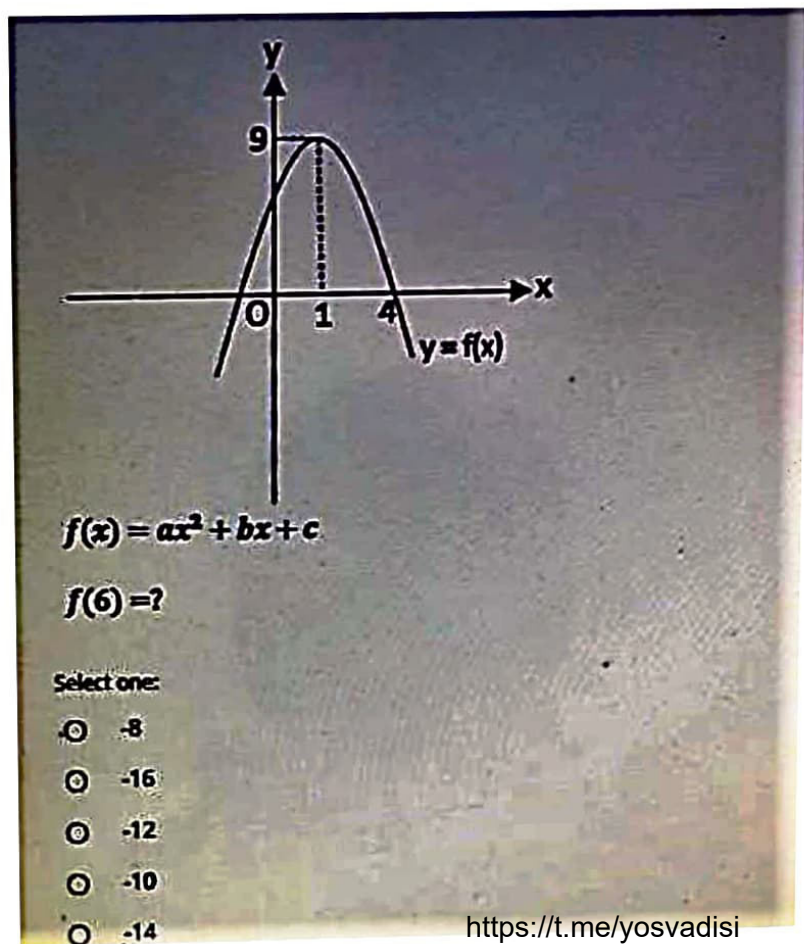




42.



43.



44.

$f: \mathbb{R} \rightarrow \mathbb{R}$   
 $g: \mathbb{R} \rightarrow \mathbb{R}$

$$f(x) = \begin{cases} -\frac{1}{x} & , x > 0 \\ 2^x - 1 & , x \leq 0 \end{cases}$$
$$g(x) = \begin{cases} 1 - x & , x \geq -\frac{1}{2} \\ x + 1 & , x < -\frac{1}{2} \end{cases}$$

**$(f \circ g \circ f \circ g)(3) = ?$**

Lütfen birini seçin:

- $\frac{4}{3}$
- 4
- $\frac{1}{2}$
- 2
- $-\frac{1}{4}$

45.

$$\frac{2a^2 + 4a - 6}{a^2 - 9} = \frac{-3a^2 + 3}{-a^2 - a + 12}$$

**$a \in \mathbb{R} \Rightarrow a = ?$**

Lütfen birini seçin:

- 3
- 2
- 8
- 5
- 11

46.

**$x^2 + 5x + 3 = 0$  denkleminin kökleri  $x_1$  ve  $x_2$  dir.**  
**(Solutions of the equation are  $x_1$  and  $x_2$ )**

$$\frac{15}{x_1^2 + 5x_1} + \frac{2 - x_2}{x_2^2 + 4x_2 + 5} = ?$$

Select one:

- 4
- 2
- 2
- 0
- 4

47.

$$0 < x < \frac{\pi}{2}, \cot x = \frac{4}{3} \Rightarrow \tan\left(\frac{3x}{2}\right) = ?$$

Select one:

- $\frac{13}{11}$
- 1
- $\frac{11}{13}$
- $\frac{13}{9}$
- $\frac{9}{13}$

48.

$$\frac{10-3x}{2x-1} \geq -1 \quad \left. \vphantom{\frac{10-3x}{2x-1}} \right\} \max(x) = ?$$

Lütfen birini seçin:

- $\frac{10}{3}$
- $\frac{11}{5}$
- 11
- 9
- $\frac{1}{3}$

49.

$$l^2 = -1.$$

$$(3 - 4l)z = 4 + 5l \Rightarrow \operatorname{Re}(z) = ?$$

Select one:

- $-\frac{3}{5}$
- 2
- $-\frac{8}{25}$
- $-\frac{2}{5}$
- 1

50.

$$\lim_{x \rightarrow 0} \left( \frac{1}{x^2} - \frac{1}{x^6} \right) = ?$$

Lütfen birini seçin:

- $\infty$
- 1
- 1
- $-\infty$
- 0

51.

$$\frac{4x^2 - 1}{2x - 4x^2} - \frac{x^2 - x - 6}{x^2 + 2x} = \frac{x^2 + 4x}{2x + 8}$$

$x < 0 \Rightarrow x = ?$

Lütfen birini seçin:

- 3
- 5
- 6
- 8
- 1

52.

$$22x = \pi \Rightarrow \frac{\cos(16x) \cos(7x)}{\sin(4x) \cos(6x)} = ?$$

Select one:

- 0
- 1
- $\frac{1}{2}$
- 1
- $-\frac{1}{2}$

53.

$$\lim_{x \rightarrow \frac{\pi}{8}} \frac{1 - \sin^2 4x}{\left(x - \frac{\pi}{8}\right)^2} = ?$$

Select one:

- $-\infty$
- 16
- $\infty$
- 8
- 1

54.

$A, x \in \mathbb{Z}^+$

$16! + 17! = 3^x A \Rightarrow \max(x) = ?$

Select one:

- 8
- 6
- 4
- 5
- 7

55.

$$\lim_{n \rightarrow \infty} \sum_{k=1}^n \frac{1}{2^k} = ?$$

Lütfen birini seçin:

- 0
- $1/2$
- $\infty$
- 1
- 2

56.

$$P(x) = -2x^3 + x^2 + 8x + 1$$

$$P(x-1) = -(x+1)Q(x-1) + k$$

$$k \in \mathbb{R} \Rightarrow Q(k) = ?$$

Select one:

- 8
- 17
- 23
- 12
- 27

57.

$$i^2 = -1 \Rightarrow \sum_{k=1}^{2023} i^k = ?$$

Select one:

- 1
- 0
- i
- i
- i-1

58.

$$\lim_{x \rightarrow \frac{\pi}{8}} \frac{1 - \sin^2 4x}{\left(x - \frac{\pi}{8}\right)^2} = ?$$

Select one:

- 1
- 16
- 8
- 8
- 8

59.

$$\lim_{n \rightarrow \infty} n \left( e^{2/n} - \cos \frac{1}{n} \right) = ?$$

Select one:

- 2
- $-\infty$
- 0
- $\infty$
- 1/2

60.

$a, b, c \in \mathbb{Z}^+$   
 $a > b > c$   
 $a + \frac{b}{c} = 20$

$\left. \begin{array}{l} a, b, c \in \mathbb{Z}^+ \\ a > b > c \\ a + \frac{b}{c} = 20 \end{array} \right\} \max(a + b + c) = ?$

Lütfen birini seçin:

- 90
- 40
- 63
- 21
- 42

61.

$$x = 5 + \sqrt{x} \Rightarrow x - \frac{5}{\sqrt{x}} = ?$$

Select one:

- 4
- 3
- 6
- 2
- 5

62.

$$7^{x+1} = 5 \Rightarrow 35^{\frac{x+1}{x+2}} = ?$$

Select one:

- 1
- 5
- 7
- 14
- 10

63.

$$\frac{3x+12}{y-5} = \frac{5y-z}{x+3} = -\frac{2y-4x}{z+6} = k \Rightarrow k = ?$$

Select one:

- 1
- 1
- 5
- 3
- 3

64.

$$A \neq \emptyset; B \neq \emptyset$$

$$s(A \setminus B) = 5$$

$$s(A' \cup B') = 18$$

$$s(A' \cap B') = 4$$

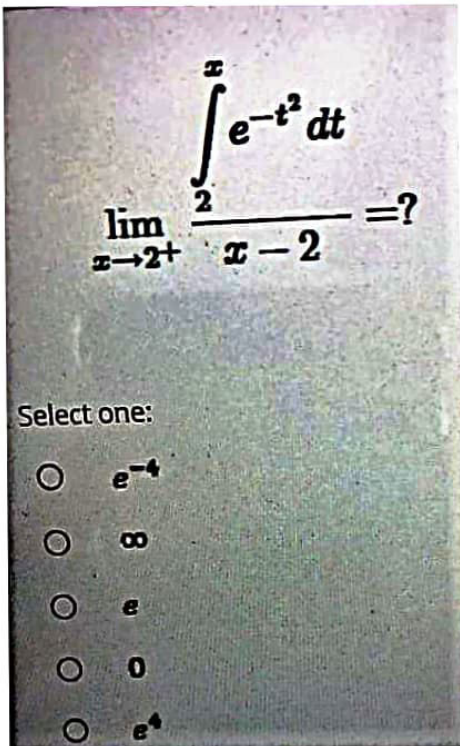
$$s(B \setminus A) = ?$$

Select one:

- 14
- 11
- 13
- 9
- 7



65.



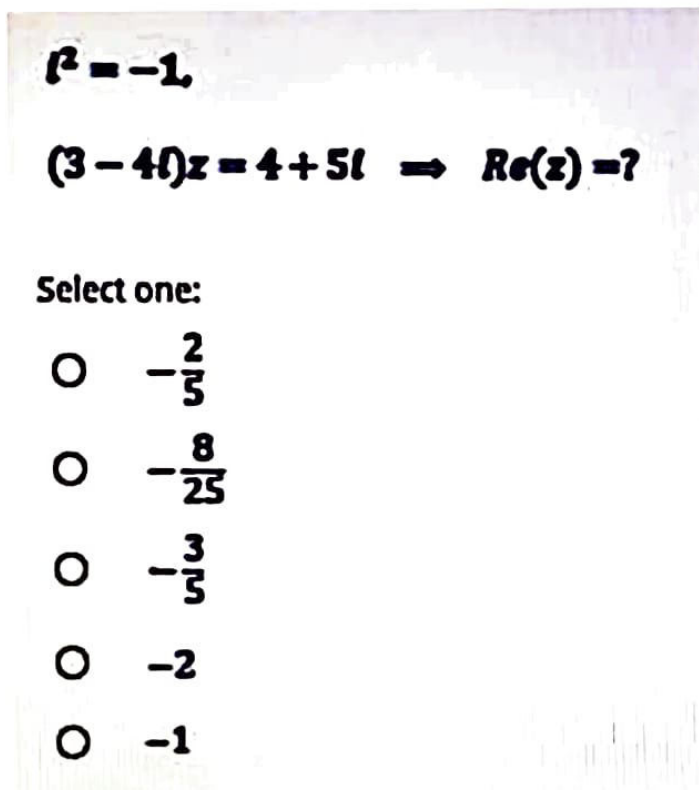
The image shows a handwritten math problem on a piece of paper. The problem is to find the limit as  $x$  approaches 2 from the right of the ratio of the integral from 2 to  $x$  of  $e^{-t^2} dt$  to  $x - 2$ . Below the problem are five multiple-choice options:  $e^{-4}$ ,  $\infty$ ,  $e$ ,  $0$ , and  $e^4$ .

$$\lim_{x \rightarrow 2^+} \frac{\int_2^x e^{-t^2} dt}{x - 2} = ?$$

Select one:

- $e^{-4}$
- $\infty$
- $e$
- $0$
- $e^4$

66.



The image shows a handwritten math problem on a piece of paper. The problem states that  $i^2 = -1$  and asks for the real part of  $z$  given the equation  $(3 - 4i)z = 4 + 5i$ . Below the problem are five multiple-choice options:  $-\frac{2}{5}$ ,  $-\frac{8}{25}$ ,  $-\frac{3}{5}$ ,  $-2$ , and  $-1$ .

$$i^2 = -1,$$
$$(3 - 4i)z = 4 + 5i \Rightarrow \operatorname{Re}(z) = ?$$

Select one:

- $-\frac{2}{5}$
- $-\frac{8}{25}$
- $-\frac{3}{5}$
- $-2$
- $-1$

# GEO:

67.

ABC üçgen,  
DEFG kare,  
Alan(DEFG)=36 cm<sup>2</sup>  
|BC| = 15 cm  
[DG] // [AH]

} |AK| = ? cm

Select one:

- 3
- 5
- 4
- 6
- 9

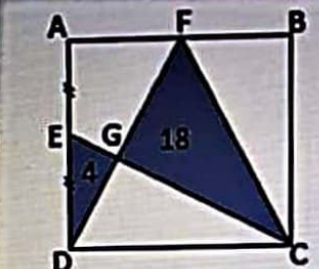
68.

O merkezli ve r cm yarıçaplı çemberde  
|AC| = 4 cm , |CB| = 6 cm , |OC| = 5 cm  
r=?

Select one:

- $7\sqrt{2}$
- 6
- $6\sqrt{2}$
- 7
- $5\sqrt{2}$

69.



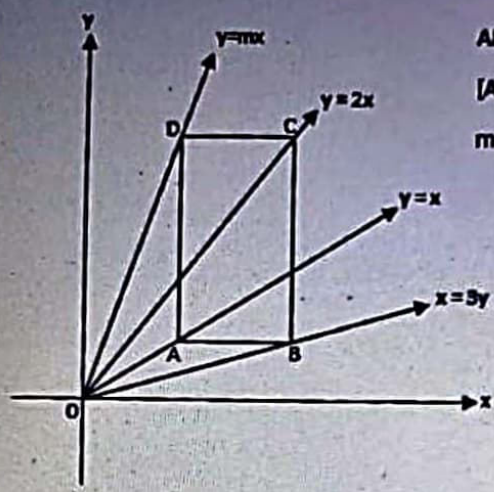
ABCD kare (square)  
ADF ve EDC üçgen (triangle)  
 $|AE| = |ED|$   
Alan(EDG) =  $4\text{cm}^2$  (area of EDG)  
Alan(GFC) =  $18\text{cm}^2$

Alan(ABCD) = ?  $\text{cm}^2$

Select one:

- 64
- 60
- 56
- 44
- 72

70.

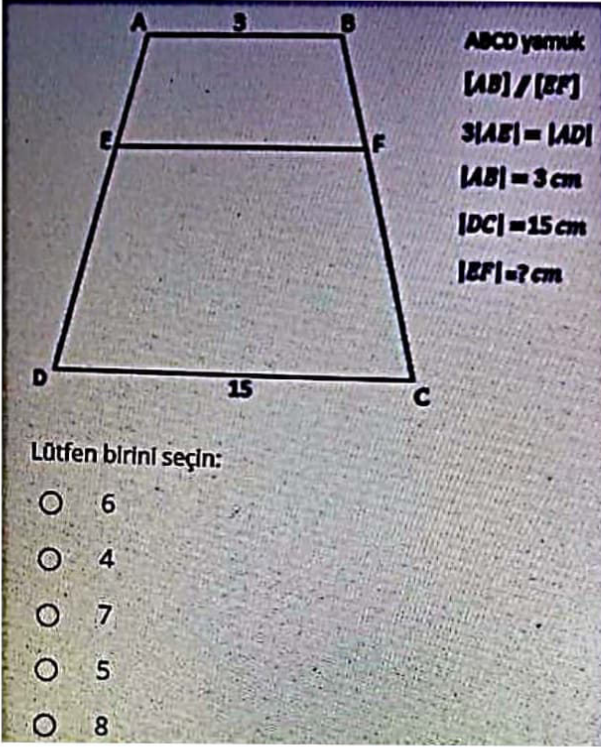


ABCD dikdörtgen,  
 $[AB] \parallel Ox$   
 $m=?$

Lütfen birini seçin:

- 3
- 5
- $\frac{7}{2}$
- 6
- $\frac{9}{2}$

71.

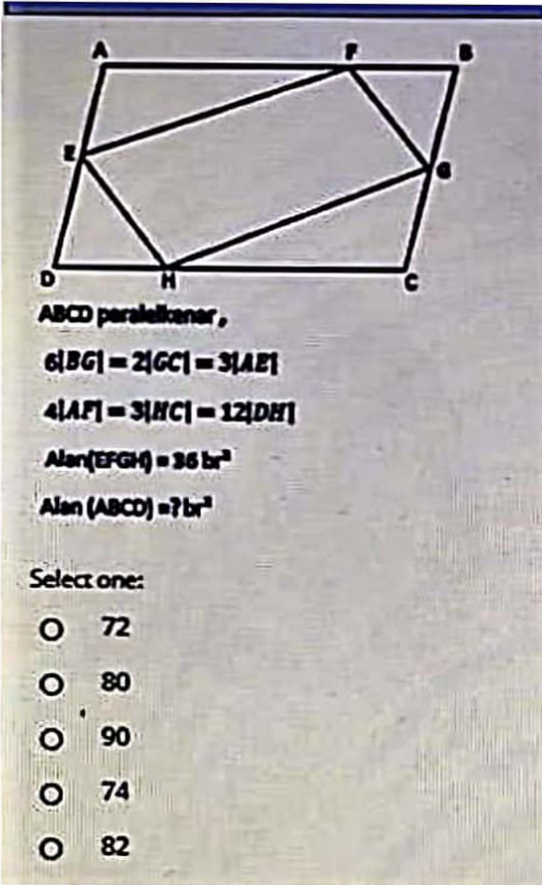


ABCD yamuk  
[AB] // [EF]  
 $3|AE| = |AD|$   
 $|AB| = 3 \text{ cm}$   
 $|DC| = 15 \text{ cm}$   
 $|EF| = ? \text{ cm}$

Lütfen birini seçin:

- 6
- 4
- 7
- 5
- 8

72.



ABCD paralelkenar,  
 $6|BG| = 2|GC| = 3|AE|$   
 $4|AF| = 3|HC| = 12|DH|$   
 $\text{Alan}(EFGH) = 36 \text{ br}^2$   
 $\text{Alan}(ABCD) = ? \text{ br}^2$

Select one:

- 72
- 80
- 90
- 74
- 82