

Deneme Sınavı
Trial Exam

1

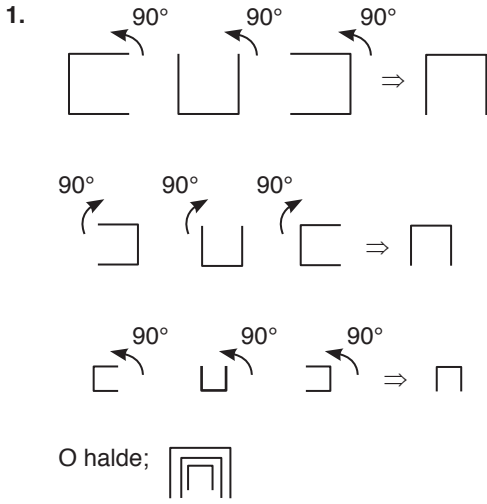
ÇÖZÜMLER

TAMAMI VIDEO ÇÖZÜMLÜ

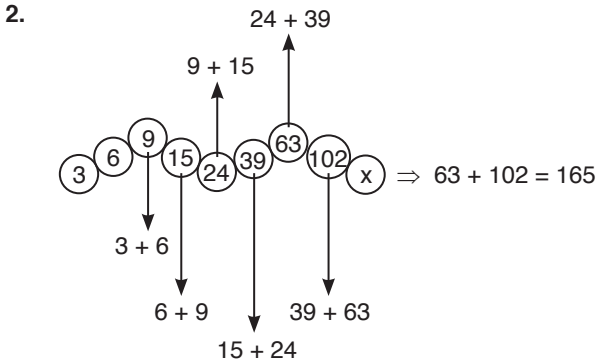
VIDEO ÇÖZÜM UYGULAMASI İÇİN



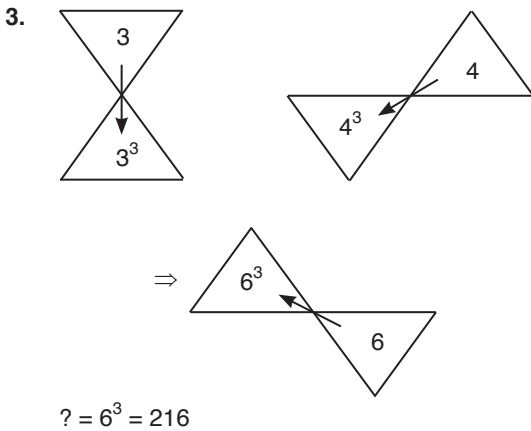
ÇÖZÜMLER



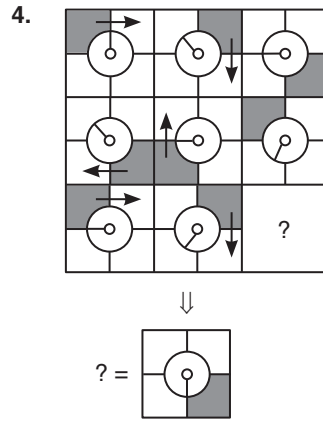
Cevap: B



Cevap: C



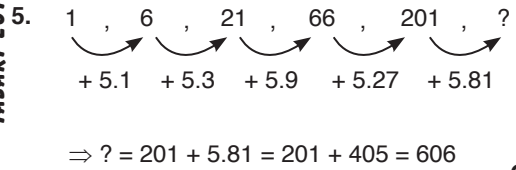
Cevap: E



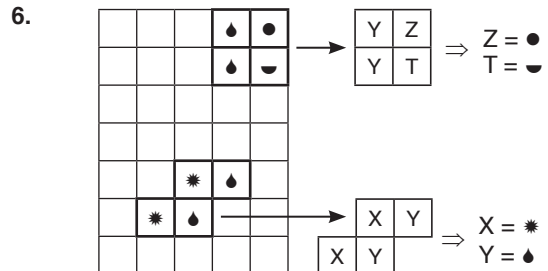
- Taralı bölgeler ok yönünde birer bölme yer değiştirmiş
- Dairenin içindeki çizgi aynı yönde her adımda 45° ilerlemiş.

Cevap: C

TASARI EĞİTİM YAYINLARI



Cevap: E



Cevap: B

7. I. $3\bullet = 2\blacktriangle$
 II. $\bullet + 2\blacktriangle = \blacksquare$
 $\bullet + 3\bullet = \blacksquare$
 $4\bullet = \blacksquare$

III. $2\bullet + \blacksquare = ?$
 $2\bullet + 4\bullet = ?$
 $6\bullet = ?$
 $2.(3\bullet) = ?$
 $2.2\blacktriangle = ? \Rightarrow ? = 4\blacktriangle$

Cevap: D

8. $\left. \begin{array}{l} A\textcircled{B}CD \\ D\textcircled{B}AC \\ D\textcircled{E}AC \\ F\textcircled{E}DH \\ FHC\textcircled{B} \end{array} \right\} \begin{array}{l} 1\textcircled{8}23 \\ 4\textcircled{8}16 \\ 2\textcircled{5}31 \\ 1\textcircled{5}23 \\ 4635 \end{array}$
 \downarrow
 H \downarrow $6 \Rightarrow H = 6$

- H = 6 ise FEDH = 4816
- O halde; E = 8 ve D = 1
- E = 8 ve D = 1 ise DEAC = 1823 olur.

Cevap: D

9. $\left. \begin{array}{l} ARTK \\ \textcircled{Z}ATF \\ \textcircled{Z}RKF \\ ARFT \\ ATKK \end{array} \right\} \begin{array}{l} \textcircled{8}137 \\ 1534 \\ \textcircled{8}547 \\ 1573 \\ 1344 \end{array} \quad \textcircled{Z} = \textcircled{8}$
 \uparrow \uparrow
 $K = 4$

O halde; $\underline{\underline{Z}}\underline{\underline{R}}\underline{\underline{K}}\underline{\underline{F}} = \underline{\underline{8}}\underline{\underline{5}}\underline{\underline{4}}\underline{\underline{7}}$ olur.

Cevap: A

10. $\begin{array}{c} \triangle \\ \textcircled{27} \\ \triangle \\ \textcircled{18} \quad \textcircled{25} \quad \textcircled{20} \end{array} \rightarrow \textcircled{27} + \textcircled{18} - \textcircled{20} = 25$

$\begin{array}{c} \triangle \\ \textcircled{32} \\ \triangle \\ \textcircled{7} \quad \textcircled{26} \quad \textcircled{13} \end{array} \rightarrow \textcircled{32} + \textcircled{7} - \textcircled{13} = 26$

$\begin{array}{c} \triangle \\ \textcircled{41} \\ \triangle \\ \textcircled{15} \quad \textcircled{?} \quad \textcircled{19} \end{array} \rightarrow \textcircled{41} + \textcircled{15} - \textcircled{19} = 37$

Cevap: C

TASARI EĞİTİM YAYINLARI

11.

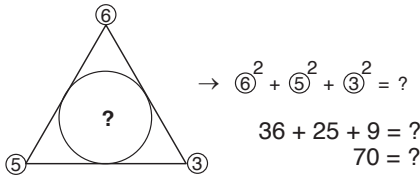
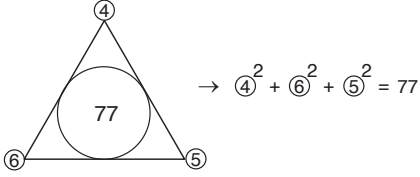
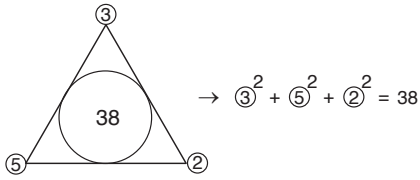
x	a	b	c
a	↓	↓	
b	→72	↓	
c	→	→24	

 $\Rightarrow \begin{array}{l} b.c = 24 \\ a.b = 72 \end{array}$
 \Downarrow
 $\frac{b.c}{a.b} = \frac{24}{72} = \frac{1}{3}$

O halde; $\frac{6.c}{a} = 6 \cdot \frac{1}{3} = 2$ olur.

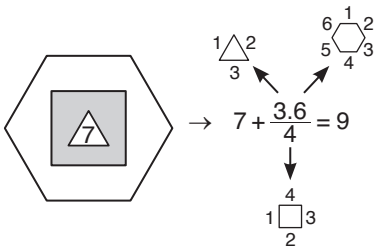
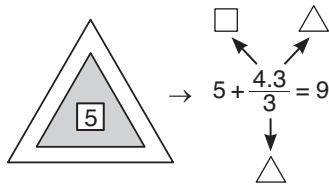
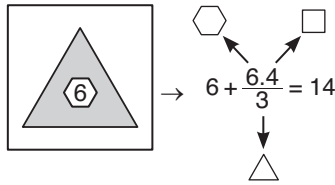
Cevap: B

12.



Cevap: D

13.



O halde;
 $? = 7 + \frac{3 \cdot 6}{4} = 7 + \frac{9}{2} = \frac{23}{2}$ olur.

Cevap: E

14.

$$\begin{aligned} \blacksquare - \blacktriangle &= 24 \\ \blacktriangle - \bullet &= 16 \\ \hline + \blacksquare + \bullet &= 60 \\ 2\blacksquare &= 100 \\ \blacksquare &= 50 \end{aligned}$$

O halde;

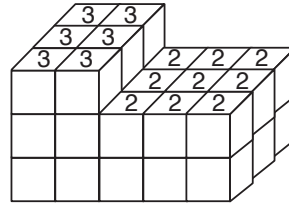
$$\blacksquare + \bullet = 60$$

$$50 + \bullet = 60$$

$$\bullet = 10 \text{ olur.}$$

Cevap: A

15.



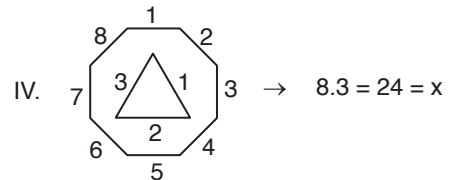
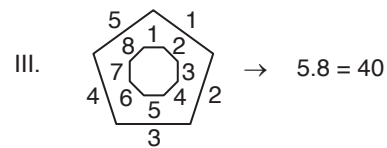
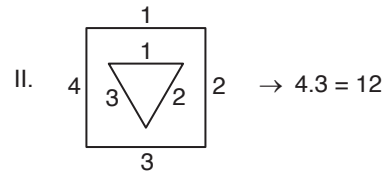
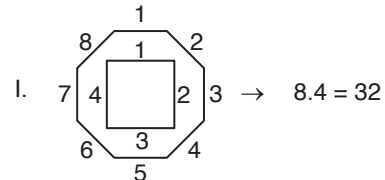
Küplerin üzerine yazılan sayılar kendisi dahil altındaki toplam küp sayısını gösteriyor.

O halde;

$$6 \cdot (3) + 9 \cdot (2) = 18 + 18 = 36 \text{ küp vardır.}$$

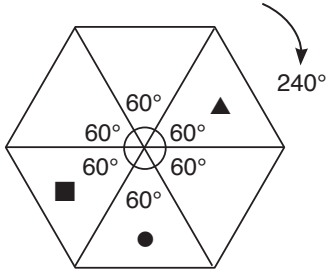
Cevap: E

16.

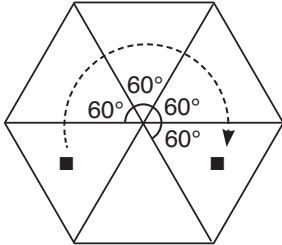
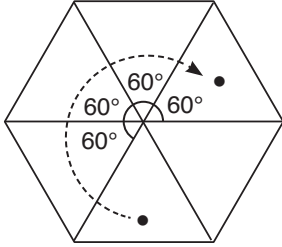
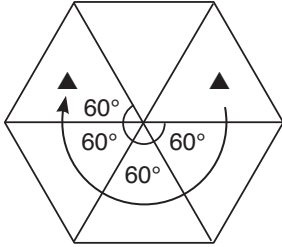


Cevap: D

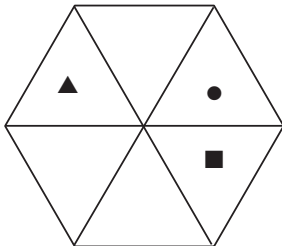
17.



Her şekil 240° yer değiştirir.

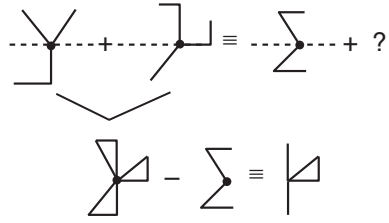


O halde;



Cevap: E

18.



Cevap: D

19.

⊙	3	5	6
4	3.4+①	5.4+②	6.4+③
6		5.6+②	
7	3.7+①		

$$a = 5.6 + ② = 32$$

$$b = 3.7 + ① = 22$$

Cevap: D

20.

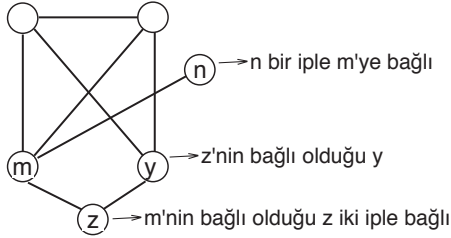
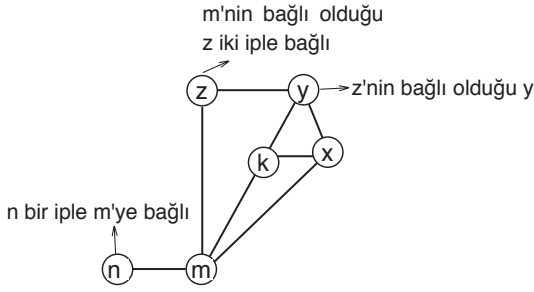
$$\textcircled{x} \rightarrow x^2, \triangle x \rightarrow 2.x, \square x \rightarrow \frac{1}{x}$$

$$\textcircled{x} \rightarrow \frac{x}{3}$$

$$\begin{aligned} \textcircled{2} \square 1 \textcircled{24} \triangle 4 &\rightarrow \frac{\textcircled{2}^2 + \frac{1}{\square 1} + \frac{\textcircled{24}}{3} + 2 \cdot \triangle 4}{3} \\ &= \frac{4 + 1 + 8 + 8}{3} = 7 \end{aligned}$$

Cevap: B

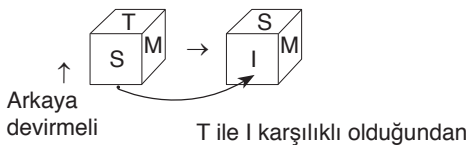
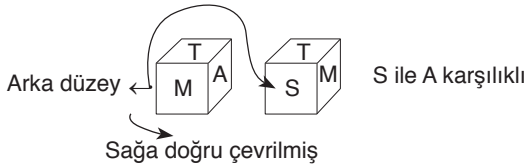
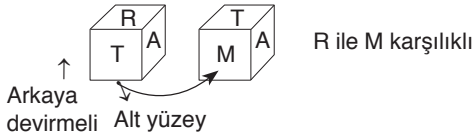
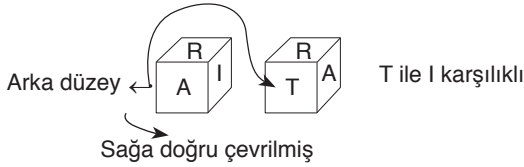
21.



O halde $A = y$, $B = z$

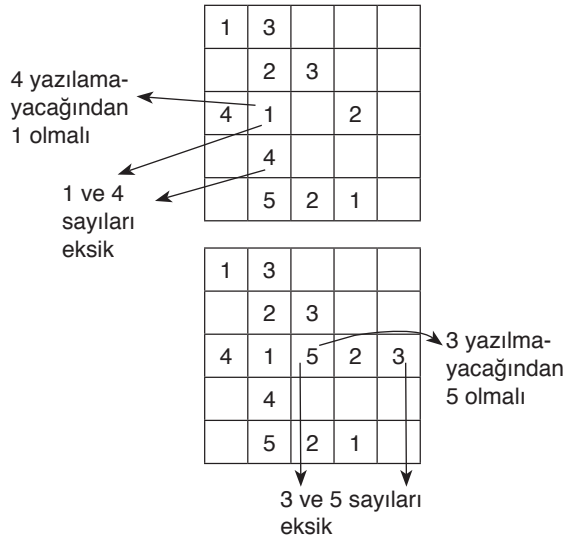
Cevap: E

22.



Cevap: A

23.



Cevap: E

24. • $x^5 = 1024 \Rightarrow x^5 = 4^5 \Rightarrow x = 4$

• $m\sqrt{y} = 2 \Rightarrow m\sqrt{8} = 2$

$m\sqrt{2^3} = 2 \Rightarrow m = 3$

• $3yz = 48 \Rightarrow 3 \cdot 8 \cdot z = 48 \Rightarrow z = 2$

O halde $(\sqrt{x} + 2m) \cdot z = (\sqrt{4} + 2 \cdot 3) \cdot 2$
 $= (2 + 6) \cdot 2$
 $= 16$

Cevap: B

25. • $x^5 = 1 \Rightarrow x = 1$

• $\sqrt{x} + 2m = 5 \Rightarrow \sqrt{1} + 2m = 5$

$2m = 4$

$m = 2$

• $m\sqrt{y} = 17$, $\sqrt{y} = 17$

$y = 289$

O halde $y + m = 289 + 2 = 291$

Cevap: D

26. $\left(\frac{a^2 - 4}{a^2}\right) \cdot \left(\frac{a}{\frac{2}{a} - 1}\right)$

$\frac{(a - 2) \cdot (a + 2)}{a^2} \cdot \frac{a}{\frac{2}{a} - 1}$

$\Rightarrow \frac{(a - 2) \cdot (a + 2)}{a^2} \cdot \frac{a^2}{2 - a} = \boxed{-a - 2}$

Cevap: C

TASARI EĞİTİM YAYINLARI

$$27. \begin{cases} 3a = 4c \\ c = 5b \end{cases} \Rightarrow \begin{cases} 5.3.a = 5.4.c \\ 3.c = 3.5.b \end{cases}$$

$$\begin{cases} 15a = 20c \\ 3c = 15b \end{cases} \Rightarrow \begin{cases} a = 20k \\ b = 3k \\ c = 15k \end{cases}$$

$$\frac{2a + b + 3c}{a} = \frac{2.20k + 3k + 3.15k}{20k} = \frac{88k}{20k} = \frac{22}{5}$$

Cevap: A

$$28. a_1 = 2$$

$$n = 2 \text{ için } a_2 = \frac{2}{1} \cdot a_1 = 2.2 = 4 = a_2$$

$$n = 3 \text{ için } a_3 = \frac{3}{2} \cdot a_2 = \frac{3}{2} \cdot 4 = 6 = a_3$$

$$n = 4 \text{ için } a_4 = \frac{4}{3} \cdot a_3 = \frac{4}{3} \cdot 6 = 8 = a_4$$

$$n = 5 \text{ için } a_5 = \frac{5}{4} \cdot a_4 = \frac{5}{4} \cdot 8 = 10 = a_5$$

Cevap: D

$$29. \left(-\frac{1}{8}\right)^{-3} \cdot (-2)^{-8}$$

$$\left(-\frac{8}{1}\right)^{+3} \cdot \frac{1}{(-2)^8} \Rightarrow -2^9 \cdot \frac{1}{2^8} = -\frac{2^9}{2^8} = -2^{9-8} = -2^1 = -2$$

Cevap: B

$$30. 2^a \oplus 3^b = a.b + 4$$

$$\left. \begin{aligned} \frac{1}{64} \oplus \frac{1}{27} &= ? \\ 2^a &= \frac{1}{64} \Rightarrow a = -6 \\ 3^b &= \frac{1}{27} \Rightarrow b = -3 \end{aligned} \right\}$$

$$2^{-6} \oplus 3^{-3} = (-6) \cdot (-3) + 4 = 18 + 4 = 22$$

Cevap: D

$$31.$$

$$\begin{array}{r} 2a + b = -3 \\ -a - b = -2 \\ + \quad c + b = 4 \\ \hline a + b + c = -1 \end{array}$$

Cevap: C

$$32. x \in \mathbb{R}^+$$

$$\begin{aligned} \frac{\sqrt[3]{x^2} \cdot \sqrt{x^3}}{\sqrt[12]{x^{26}}} &= \frac{3.2\sqrt{(x^2)^2} \cdot 3.2\sqrt{(x^3)^3}}{\sqrt[12]{x^{26}}} = \frac{6\sqrt{x^4 \cdot x^9}}{\sqrt[12]{x^{26}}} \\ &= \frac{\sqrt[6]{x^{13}}}{\sqrt[6]{x^{13}}} = 1 \end{aligned}$$

Cevap: A

$$33. 3^a = b^{-1} \Rightarrow (3^a)^2 = (b^{-1})^2 \Rightarrow 9^a = b^{-2}$$

$$9^{1-a} = \frac{9^1}{9^a} \Rightarrow \frac{9}{b^{-2}} = \frac{9}{1/b^2} = 9b^2$$

Cevap: E

$$34. \frac{1}{a^2} + \frac{1}{b^2} = 2 \quad (a-b)^2 = a^2 - 2ab + b^2$$

$$\frac{a^2 + b^2}{(ab)^2} = 2 \quad \begin{aligned} &= a^2 + b^2 - 2ab \\ &= a^2 + b^2 - 2.3 \\ &= a^2 + b^2 - 6 \end{aligned}$$

$$a^2 + b^2 = 2 \cdot (ab)^2 = 18 - 6 = 12$$

$$a^2 + b^2 = 2 \cdot (3)^2 = 12$$

$$\boxed{a^2 + b^2 = 18}$$

Cevap: B

$$35. \frac{x^2 - x^3 + x - 1}{x^2 - 1} = ?$$

$$\begin{aligned} \frac{-x^2(x-1) + (x-1)}{(x-1)(x+1)} &= \frac{(x-1) \cdot (1-x^2)}{(x-1) \cdot (x+1)} \\ &= \frac{(1-x) \cdot (1+x)}{x+1} = 1-x \end{aligned}$$

Cevap: C

$$36. \frac{a}{2} = \frac{b}{3} = \frac{c}{5} \quad \left. \begin{aligned} &a = 2k \\ &2a + 3b - c = 16 \\ &\frac{a+b}{c} = ? \end{aligned} \right\} \begin{aligned} &b = 3k \\ &c = 5k \end{aligned}$$

$$4.k + 9k - 5k = 16$$

$$8k = 16$$

$$k = 2$$

$$\frac{2k + 3k}{5k} = \frac{5k}{5k} = 1$$

Cevap: C

37. $\sqrt{12} - \sqrt{108} + \sqrt{3} = ?$

$$\begin{aligned} & \sqrt{12} - \sqrt{4 \cdot 27} + \sqrt{3} \\ & \sqrt{12} - 2\sqrt{27} + \sqrt{3} \\ & \sqrt{9 \cdot 3} - 2\sqrt{9 \cdot 3} + \sqrt{3} \\ & \sqrt{9} - \sqrt{3} + \sqrt{3} \\ & \sqrt{9} = 3 \end{aligned}$$

Cevap: B

38. $a, b, c \in \mathbb{N}^+$

$$\frac{1}{a} > \frac{1}{b} > \frac{1}{c}$$

$$\frac{1}{a} > \frac{1}{b} > \frac{1}{c} \Rightarrow a < b < c \text{ dir.}$$

$$|a - b| - |a - c| - |b - c| = ?$$

$$-(a - b) + (a - c) + (b - c)$$

$$-a + b + a - c + b - c = 2b - 2c$$

Cevap: D

39. $\frac{3}{5} + \frac{11}{13} - \frac{6}{17} = x$

$$+ \frac{12}{5} - \frac{11}{17} + \frac{15}{13} = M$$

$$\frac{15}{5} - \frac{17}{17} + \frac{26}{13} = M + x$$

$$3 - 1 + 2 = M + x \Rightarrow M + x = 4$$

$$M = 4 - x$$

Cevap: C

40. $2013^{2015} \equiv x \pmod{5}$

$$3^1 = 3$$

$$3^2 = 4$$

$$3^3 = 2$$

$$3^4 = 1$$

$$\underbrace{(2013^4)^{503}}_1 \cdot 2013^3 = 2$$

Cevap: C

41. $a \otimes b = a \cdot b - 1$

$$2^{2 \otimes 3} \otimes 2^{1 \otimes 3} = ?$$

$$2 \otimes 3 = 2 \cdot 3 - 1 = 5$$

$$1 \otimes 3 = 1 \cdot 3 - 1 = 2$$

$$2^5 \otimes 2^2 = 32 \otimes 4$$

$$= 32 \cdot 4 - 1$$

$$= 127$$

Cevap: E

42. $n! = 12 \cdot 3 \cdot \dots \cdot (n-1) \cdot n$

$$a_n = \frac{n^n}{n!} \Rightarrow \frac{a_{n+1}}{a_n} = ?$$

$$\begin{aligned} a_{n+1} &= \frac{(n+1)^{n+1}}{(n+1)!} \\ a_n &= \frac{n^n}{n!} \end{aligned} \left\{ \begin{array}{l} \frac{(n+1)^{n+1}}{(n+1)!} \\ \frac{n^n}{n!} \end{array} \right\} \frac{(n+1)^{n+1}}{n^n} = \frac{(n+1)^{n+1}}{(n+1) \cdot n!} \cdot \frac{n!}{n^n} \\ &= \frac{(n+1)^n \cdot \cancel{(n+1)}}{\cancel{(n+1)}} \cdot \frac{1}{n^n} \\ &= \frac{(n+1)^n}{n^n} \cdot \left(\frac{n+1}{n}\right)^n = \left(1 + \frac{1}{n}\right)^n$$

Cevap: C

43.
$$\begin{array}{r|l} x^5 - 3x^3 - x & x^2 + 2 \\ \hline x^5 + 2x^3 & x^3 - 5x \\ \hline -5x^3 - x & \\ \hline -5x^3 - 10x & \\ \hline 9x & \end{array}$$

$$Q(x) = x^3 - 5x$$

Cevap: E

44. $f(x) = \frac{1}{x}$

$$g(x+1) = 2x - 3$$

$$(g^{-1} \circ f^{-1})^{-1}(x) = ?$$

$$(g^{-1} \circ f^{-1})^{-1}(x) = (f \circ g)(x)$$

$$= f(g(x))$$

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

$$g(x) = 2x - 5$$

$$\Rightarrow f(g(x)) = f(2x-5) = \frac{1}{2x-5}$$

Cevap: B

45. $x^3 + x - 2 = (x-1) \cdot P(x) \quad P(2) = ?$

$$x = 2 \text{ için; } 2^3 + 2 - 2 = (2-1) \cdot P(2)$$

$$P(2) = 8$$

Cevap: A

$$46. \left. \begin{array}{l} s(A \cup B) = 17 \\ s(A \cap B) = 4 \\ s(A) = 2s(B) \\ s(A) = ? \end{array} \right\} \begin{array}{l} s(A \cup B) = s(A) + s(B) - s(A \cap B) \\ 17 = k + 2k - 4 \\ 3k = 21 \\ k = 7 \end{array}$$

$$s(B) = k$$

$$s(A) = 2k \Rightarrow s(A) = 2 \cdot 7 = 14$$

Cevap: E

$$47. f(x) = \begin{cases} x+2 & x < 1 \\ x^2 - 1 & 1 \leq x < 4 \\ 3x - 2 & x \geq 4 \end{cases}$$

$$f(-5) = (-5) + 2 = -3$$

$$f(2) = 2^2 - 1 = 3$$

$$f(4) = 3 \cdot 4 - 2 = 10$$

$$\Rightarrow f(-5) - 2f(2) + f(4) = -3 - 2 \cdot 3 + 10 = 1$$

Cevap: B

$$48. f: \mathbb{R} \rightarrow \mathbb{R}$$

$$f(x-3) = 3x + 5$$

$$f^{-1}(a) = -2 \quad a = ?$$

$$f^{-1}(a) = -2 \text{ ise } f(-2) = a$$

$$x = 1 \text{ için } f(-2) = 3 \cdot 1 + 5 \\ = 8 = a$$

Cevap: D

$$49. P(x) = (x+1) \cdot (x+2) \cdot Q(x) + Px + r$$

$$P(-1) = 3, \quad P(-2) = 9$$

$$P + r = ?$$

$$x = -1 \text{ için } P(-1) = 0 \cdot Q(x) - P + r \Rightarrow r - P = 3$$

$$x = -2 \text{ için } P(-2) = 0 \cdot Q(x) - 2P + r \Rightarrow r - 2P = 9$$

$$r - 2P = 9$$

$$\underline{p - r = -3}$$

$$-P = 6$$

$$P = -6 \Rightarrow r - (-6) = 3 \quad P + r = (-3) + (-6) = -9$$

$$r + 6 = 3$$

$$r = -3$$

Cevap: B

$$50. f(x) = \ln(5 \cdot e^{2x+3}) \text{ ise } f'(x) = ?$$

Özellik: $\ln(ab) = \ln(a) + \ln(b)$ olduğu için

$$f(x) = \ln(5e^{2x+3}) = \ln 5 + \ln(e^{2x+3})$$

$$f'(x) = (\ln 5)' + (2x+3)'$$

$$f'(x) = 2$$

Cevap: D

$$51. f: \mathbb{R}^+ \rightarrow \mathbb{R}$$

$$f(x) = x^{\cos x}$$

$$f'(\pi) = ?$$

$$f(x) = x^{\cos x}$$

$$\ln f(x) = \ln(x^{\cos x}) = \cos x \cdot \ln x$$

$$\ln(f(x)) = \cos x \cdot \ln(x)$$

$$\frac{f'(x)}{f(x)} = -\sin x \cdot \ln x + (\cos x)' \cdot \frac{1}{x}$$

$$f'(x) = x^{\cos x} \left(-\sin x \cdot \ln x + \cos x \cdot \frac{1}{x} \right)$$

$$f'(\pi) = \pi^{\cos \pi} \left(\underbrace{-\sin \pi}_{0} \cdot \ln(\pi) + \underbrace{\cos \pi}_{-1} \cdot \frac{1}{\pi} \right)$$

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

Cevap: E

$$52. \left. \begin{array}{l} \text{Log} 2 = a \\ \text{Log} 3 = b \end{array} \right\}$$

$$\text{Log}(1.2) = ? \quad \left. \begin{array}{l} \text{Log}\left(\frac{12}{10}\right) = \text{Log} 12 - \text{Log} 10 \\ = \text{Log}(4 \cdot 3) - \text{Log} 10 \\ = \text{Log} 4 + \text{Log} 3 - \text{Log} 10 \\ = \text{Log} 2^2 + \text{Log} 3 - \text{Log} 10 \\ = 2 \cdot \text{Log} 2 + \text{Log} 3 - \text{Log} 10 \\ = 2 \cdot a + b - 1 \end{array} \right\}$$

$$= \text{Log}(4 \cdot 3) - \text{Log} 10$$

$$= \text{Log} 4 + \text{Log} 3 - \text{Log} 10$$

$$= \text{Log} 2^2 + \text{Log} 3 - \text{Log} 10$$

$$= 2 \cdot \text{Log} 2 + \text{Log} 3 - \text{Log} 10$$

$$= 2 \cdot a + b - 1$$

Cevap: B

$$53. x > 0$$

$$7 \text{Log} x = \log 8 + \frac{1}{2} \cdot \log 2 \quad x = ?$$

$$7 \text{Log} x = \log 2^3 + \log 2^{\frac{1}{2}}$$

$$\text{Log} x^7 = \log(2^3 \cdot 2^{\frac{1}{2}})$$

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

$$x^7 = 2^{\frac{7}{2}}$$

$$x = 2^{\frac{1}{2}}$$

$$x = \sqrt{2}$$

Cevap: D

$$54. \lim_{x \rightarrow \infty} \frac{3}{2x+1} \cdot (5x-2) = ?$$

$$\lim_{x \rightarrow \infty} \frac{15x-6}{2x+1} = \frac{15}{2}$$

Cevap: A

$$55. \lim_{x \rightarrow \frac{\pi}{2}} \frac{\ln(\sin x)}{(\pi - 2x)^2} = ? \quad \frac{0}{0} \text{ belirsizlik hali L'Hospital}$$

$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{(\sin x)^1}{\sin x} = \frac{1}{-2 \cdot 2 \cdot (\pi - 2x)}$$

$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{\cot x}{-4\pi + 5x} = \frac{0}{0} \text{ belirsizlik hali L'Hospital}$$

$$\lim_{x \rightarrow \frac{\pi}{2}} \frac{-(1 + \cot^2 x)}{8} = -\frac{1}{8}$$

Cevap: E

$$56. \lim_{x \rightarrow a} \frac{x^4 - a^4}{x^2 - a^2} = ? \quad \frac{0}{0} \text{ belirsizlik hali L'Hospital}$$

$$\lim_{x \rightarrow a} \frac{(x^2 - a^2) \cdot (x^2 + a^2)}{x^2 - a^2} = 2a^2$$

Cevap: C

$$57. f'(x) = \frac{(\sqrt{x})^1 \cdot e^{2x} - 2e^{2x} \cdot \sqrt{x}}{(e^{2x})^2}$$

$$= \frac{1}{2\sqrt{x}} \cdot e^{2x} - 2e^{2x} \cdot \sqrt{x} = \frac{1}{2\sqrt{x}} \cdot e^{2x} - 2e^{2x} \cdot \sqrt{x} \Rightarrow f'(1) = ?$$

$$\frac{f'(1)}{e^4} = \frac{1}{2} \cdot e^2 - 2e^2 \cdot \sqrt{1} = -\frac{3}{2} \cdot e^2$$

Cevap: D

$$58. f(x) = \sin^2\left(\frac{\pi}{2} \cdot \frac{x}{2}\right) \text{ ise } f'(1) = ?$$

$$f'(x) = 2 \cdot \sin\left(\frac{\pi}{2} \cdot \frac{x}{2}\right) \cdot \cos\left(\frac{\pi}{2} \cdot \frac{x}{2}\right) \cdot \frac{\pi}{4}$$

$$f'(1) = 2 \cdot \sin\left(\frac{\pi}{4}\right) \cdot \cos\left(\frac{\pi}{4}\right) \cdot \frac{\pi}{4} = 2 \cdot \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{2}}{2} \cdot \frac{\pi}{4} = \frac{\pi}{4}$$

Cevap: C

$$59. \tan \alpha \cdot \cot \alpha = 1 \text{ olduğu için}$$

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

$$x - 1 = 1$$

$$x = 2$$

Cevap: E

$$60. \frac{\sin 75}{\cos 15} + \frac{\cos 75}{\sin 15} = ?$$

$$\frac{\sin 75 \cdot \sin 15 + \cos 15 \cdot \cos 75}{\sin 15 \cdot \cos 15} = \frac{\cos(75 - 15)}{2 \cdot \frac{1}{2} \cdot \sin 15 \cdot \cos 15}$$

$$= \frac{\cos 60}{\frac{1}{2} \cdot \sin 30} = 2$$

Cevap: D

$$61. \int \frac{3x^2}{(x^3 + 1)^5} dx = ? \quad x^3 + 1 = u$$

$$\int \frac{du}{(u)^5} = \frac{u^{-5+1}}{-5+1} = -\frac{1}{4 \cdot u^4} \quad 3x^2 dx = du$$

$$= -\frac{1}{4 \cdot (x^3 + 1)^4} + C$$

Cevap: A

$$62. \int_1^5 |x^2 - 2x| dx \quad \begin{array}{c|c|c|c} & 0 & & 2 \\ \hline & + & - & + \end{array}$$

$$\int_1^2 -(x^2 - 2x) dx + \int_2^5 (x^2 - 2x) dx$$

$$\left(-\frac{x^3}{3} + x^2\right) \Big|_1^2 + \left(\frac{x^3}{3} - 2x^2\right) \Big|_2^5$$

$$-\frac{8}{3} + 4 + \frac{1}{3} - 1 + \frac{125}{3} - 25 - \frac{8}{3} + 4$$

$$\frac{110}{3} - 18 = \frac{56}{3}$$

Cevap: C

63. $15 = 3.5$

5 ile bölünebilmesi için birler basamağı 0 veya 5 olmalıdır.

3 ile bölünebilmesi için rakamları toplamı 3 veya 3'ün katı olmalıdır.

b = 0 iken

$$4 + a + 5 + 1 + 0 = 3k$$

$$10 + a = 3k$$

$$\downarrow$$

$$2$$

$$5$$

$$8$$

$$a + b = ?$$

$$\downarrow$$

$$2 + 0 = 2$$

$$5 + 0 = \textcircled{5}$$

$$8 + 0 = \textcircled{8}$$

b = 5 iken

$$4 + a + 5 + 1 + 5 = 3k$$

$$15 + a = 3k$$

$$\downarrow$$

$$0$$

$$3$$

$$6$$

$$9$$

$$a + b = ?$$

$$\downarrow$$

$$0 + 5 = \textcircled{5}$$

$$3 + 5 = \textcircled{8}$$

$$6 + 5 = 11$$

$$9 + 5 = 14$$

a + b toplamının alabileceği farklı değerler

2, 5, 8, 11 ve 14 yani 5 tane

Cevap: C

$$\begin{array}{rcl}
 64. & 0! & = 1 \\
 & 1! & = 1 \\
 & 2! = 1.2 & = 2 \\
 & 3! = 1.2.3 & = 6 \\
 & 4! = 1.2.3.4 & = 24 \\
 & 5! = 1.2.3.4.5 & = 120 \\
 & \vdots & \\
 & + 55! & = 0 \\
 \hline
 & & \textcircled{4} \text{ bulunur.}
 \end{array}$$

65. $i^2 = -1$

$$\frac{4}{\sqrt{3}-i} + \frac{2}{i} = ?$$

$$\frac{4(\sqrt{3}+i)}{(\sqrt{3}-i)(\sqrt{3}+i)} + \frac{2i}{i.i} = \frac{4\sqrt{3}+4i}{3-(i)^2} + \frac{2i}{i^2}$$

$$\frac{4\sqrt{3}+4i}{4} - 2i = \sqrt{3} - i$$

Cevap: B

66. $i^2 = -1$

$$(1+i)^2 - (1-i)^2 = (1+2i-1) - (1-2i-1) = 4i$$

Cevap: E

67. $\prod_{k=2}^{31} \text{Log}_k^{(k+1)} = ?$

$$\begin{aligned}
 \text{Log}_2^3 \cdot \text{Log}_3^4 \cdot \dots \cdot \text{Log}_{31}^{32} &= \frac{\log 3}{\log 2} \cdot \frac{\log 4}{\log 3} \cdot \frac{\log 5}{\log 4} \cdot \dots \cdot \frac{\log 32}{\log 31} \\
 &= \frac{\log 32}{\log 2} = \log_2^{32} = 5
 \end{aligned}$$

Cevap: E

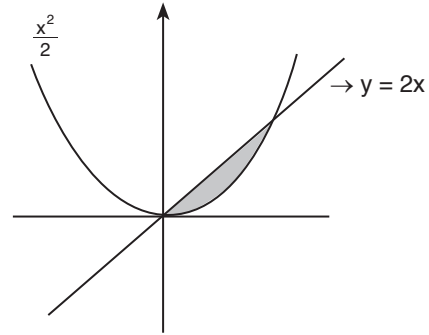
68. $\sum_{k=-2}^3 (k^2 + 2k + 1) = ?$

$$\sum_{k=-2}^3 (k+1)^2 = (-2+1)^2 + (-1+1)^2 + (0+1)^2 + (1+1)^2 + (2+1)^2 + (3+1)^2$$

$$1 + 0 + 1 + 4 + 9 + 16 = 31$$

Cevap: A

69.



Cevap: B

$$\frac{x^2}{2} = 2x$$

$$x^2 = 4x$$

$$x(x-4) = 0$$

$$x = 0, x = 4$$

$$\int_0^4 \left(2x - \frac{x^2}{2}\right) dx = \left(x^2 - \frac{x^3}{6}\right) \Big|_0^4$$

$$16 - \frac{64}{6} = \frac{32}{6} = \frac{16}{3}$$

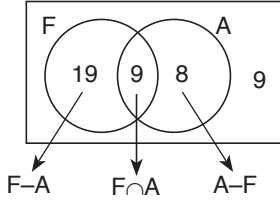
Cevap: B

$$70. y = \arcsin x^2 \quad y' = \frac{2x}{\sqrt{1-x^4}}$$

$$y' = ?$$

Cevap: A

71.



Fransızca: F = 25

Almanca: A = 17

$F \cap A = 9$

O halde kursa katılmayan öğrenci sayısı 9 kişidir.

Cevap: B

72. Her $12x$ gram A maddesine $9x$ gram B maddesi karıştırılarak bir ilaç hazırlanıyor olsun.

Buna göre,

$$12x + 9x = 84$$

$$21x = 84$$

$$x = 4 \text{ tür.}$$

O halde 84 gramlık bu ilaçta

$12 \cdot 4 = 48$ gram A maddesi vardır.

Cevap: C

$$73. A - 3 \cdot \begin{bmatrix} 1 & 5 \\ 2 & 4 \end{bmatrix} + 6 = 0 \quad A = ?$$

$$A = \begin{bmatrix} 3 & 15 \\ 6 & 12 \end{bmatrix} - 6 \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} = \begin{bmatrix} 3 & 15 \\ 0 & 12 \end{bmatrix} + \begin{bmatrix} -6 & 0 \\ 0 & -6 \end{bmatrix}$$

$$A = \begin{bmatrix} -3 & 15 \\ 6 & 6 \end{bmatrix}$$

Cevap: A

$$74. \frac{dx}{dy} = \frac{3}{3t^2 + 2t + 1} \Big|_{t=1} = \frac{3}{6} = \frac{1}{2}$$

Cevap: C

$$75. Z_1 = 2 \cdot (\cos 240 + i \sin 240)$$

$$Z_2 = 6 \cdot (\cos 150 + i \sin 150)$$

$$Z_3 = 3 \cdot (\cos 345 + i \sin 345)$$

$$\frac{Z_1 \cdot Z_2}{Z_3} = ?$$

$$\frac{2 \cdot \text{cis} 240 \cdot 6 \cdot \text{cis} 150}{3 \cdot \text{cis} 345} = 4 \cdot \text{cis} (240 + 150 - 345)$$

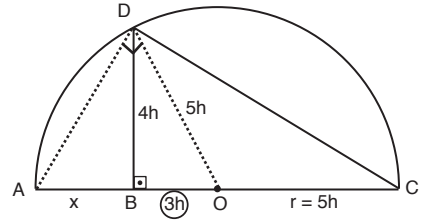
$$= 4 \cdot \text{cis} 45$$

$$= 4 \cdot \left(\frac{\sqrt{2}}{2} + i \cdot \frac{\sqrt{2}}{2} \right)$$

$$= 2\sqrt{2}i + 2\sqrt{2}$$

Cevap: D

76.



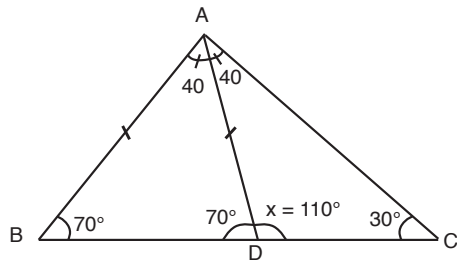
$$|OC| = r = 5h$$

$$x = 5h - 3h$$

$$x = 2h$$

Cevap: B

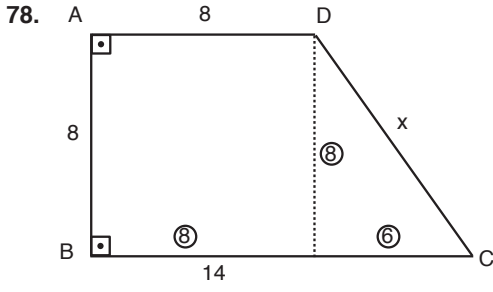
77.



$$|AD| = |AB|$$

$$m(\widehat{ACD}) = 30^\circ$$

Cevap: B



6 – 8 – 10 üçgeninden $x = 10$ veya

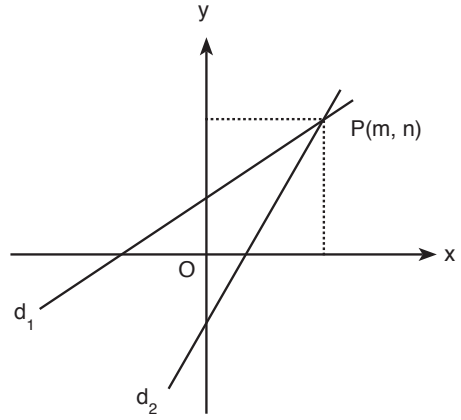
$$6^2 + 8^2 = x^2$$

$$100 = x^2$$

$$x = 10$$

Cevap: A

80.



$$d_1 : y = 2x - 6 \quad m + n = ?$$

$$d_2 : y - x = 1$$

$$2x - 6 = y$$

$$2x - 6 = x + 1$$

$$1 + x = y$$

$$x = 7$$

$$y = 1 + 7 = 8$$

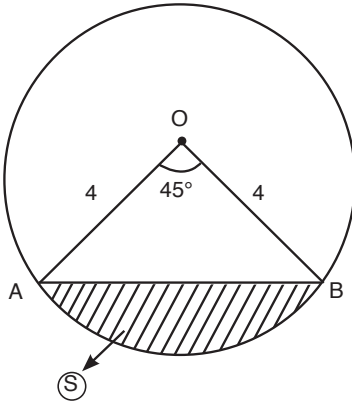
$$m = 7$$

$$n = 8$$

$$m + n = 15$$

Cevap: E

79.



Taralı Alan = Daire Dilimi – Üçgen

$$= \pi \cdot r^2 \cdot \frac{45}{360} - \frac{4 \cdot 4}{2} \cdot \sin 45$$

$$\pi \cdot 4^2 \cdot \frac{1}{8} - \frac{4 \cdot 4}{2} \cdot \frac{\sqrt{2}}{2}$$

$$2\pi - 4\sqrt{2}$$

Cevap: E