

ÇÖZÜMLER

$$1. \quad \frac{4}{3} - \frac{\frac{3}{2}}{2 - \frac{1}{2}} = \frac{4}{3} - \frac{\frac{3}{2}}{\frac{3}{2}}$$

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

$$= \frac{1}{3} \text{ bulunur.}$$

Cevap: B

$$2. \quad \frac{0,15}{0,2 + \frac{0,3}{0,75}} = \frac{\frac{15}{100}}{\frac{2}{10} + \frac{30}{75}}$$

$$= \frac{\frac{15}{100}}{\frac{1}{5} + \frac{6^2}{15^2}}$$

$$= \frac{\frac{5}{100} \cdot 5}{\frac{5}{3}}$$

$$= \frac{25}{100} = 0,25$$

Cevap: B

$$3. \quad \frac{6^4 - 4^2}{2^{10} - 2^9 + 2^7} = \frac{2^4 \cdot 3^4 - 2^4}{2^7(2^3 - 2^2 + 1)}$$

$$= \frac{2^4(3^4 - 1)}{2^7 \cdot 5}$$

$$= \frac{80}{40} = 2$$

Cevap: B

$$4. \quad \frac{\sqrt{128} - \sqrt{8}}{\sqrt{3}(\sqrt{48} - \sqrt{12})}$$

$$= \frac{\sqrt{64 \cdot 2} - \sqrt{4 \cdot 2}}{\sqrt{3}(\sqrt{16 \cdot 3} - \sqrt{4 \cdot 3})}$$

$$= \frac{8\sqrt{2} - 2\sqrt{2}}{\sqrt{3}(4\sqrt{3} - 2\sqrt{3})}$$

$$= \frac{6\sqrt{2}}{\sqrt{3} \cdot (2\sqrt{3})} = \frac{6\sqrt{2}}{6}$$

$$= \sqrt{2}$$

Cevap: A

TASARI EĞİTİM YAYINLARI

$$5. \quad \frac{8! - 7!}{6!} - \frac{5! - 4!}{3!}$$

$$= \frac{8!(8 \cdot 7 - 7)}{6!} - \frac{3!(5 \cdot 4 - 4)}{3!}$$

$$= (56 - 7) - (20 - 4)$$

$$= 49 - 16$$

$$= 33 \text{ bulunur.}$$

Cevap: D

$$6. \quad \sqrt[3]{x+1} - \sqrt[3]{27x+27} + \sqrt[3]{64x+64} = 8$$

$$\sqrt[3]{x+1} - \sqrt[3]{3^3(x+1)} + \sqrt[3]{4^3(x+1)} = 8$$

$$\sqrt[3]{x+1} - 3\sqrt[3]{(x+1)} + 4\sqrt[3]{(x+1)} = 8$$

$$2\sqrt[3]{x+1} = 8$$

$$(\sqrt[3]{x+1})^3 = (4)^3$$

$$x+1 = 64$$

$$x = 63 \text{ bulunur.}$$

Cevap: D

$$\begin{aligned}
7. \quad & \frac{ab^3 + a^2}{ab + b - a - 1} \cdot \frac{a + b^2}{b - 1} \\
&= \frac{ab(b^2 + a)}{b(a+1) - (a+1)} \cdot \frac{b-1}{a+b^2} \\
&= \frac{ab}{(a+1)(b-1)} \cdot \frac{(b-1)}{1} \\
&= \frac{ab}{a+1}
\end{aligned}$$

Cevap: E

$$\begin{aligned}
8. \quad * \quad & (4, a) \rightarrow 4^{a+1} = 64 \\
& 4^{a+1} = 4^3 \\
& a + 1 = 3 \Rightarrow a = 2 \\
& (4, 2) \rightarrow 5x + 3y = 20 + 6 = 26 = b \\
* \quad & (c, d) \rightarrow c^{d+1} = 1 \text{ ve } d^{c+1} = 25 \\
& d^{c+1} = 5^2 \\
& c + 1 = 2 \\
& c = 1 \text{ ve } d = 5 \\
* \quad & (3, e) \rightarrow 3^{e+1} \rightarrow e^{3+1} = f \rightarrow 27 \\
& 5x + 3y = 27 \quad e^{3+1} = f \\
& \begin{array}{c} \downarrow \quad \downarrow \\ 3 \quad 4 \end{array} \quad 4^4 = 256 = f \\
& e = 4 \text{ olur.} \\
& f - e + a + b + c + d = 256 - 3 + 2 - 26 + 1 + 5 \\
& = 234 \text{ bulunur.}
\end{aligned}$$

Cevap: C

$$\begin{aligned}
9. \quad & x - 2y = 6 \dots\dots\dots(i) \\
& \frac{3^x}{9^{2y}} = \frac{3^x}{3^{4y}} = 3^4 \\
& 3^{x-4y} = 3^4 \\
& x - 4y = 4 \dots\dots\dots(ii) \\
& i \text{ ve ii'den} \\
& \begin{array}{r} x - 2y = 6 \\ -1/ \quad x - 4y = 4 \\ \hline x - 2y = 6 \\ -x + 4y = -4 \\ \hline 2y = 2 \\ y = 1 \text{ bulunur.} \end{array}
\end{aligned}$$

Cevap: C

$$\begin{aligned}
10. \quad & \frac{(n+1)!}{(n-2)!} + \frac{n!}{(n-1)!} = 64 \\
& \frac{(n+1) \cdot n \cdot (n-1) \cdot \cancel{(n-2)!}}{\cancel{(n-2)!}} + \frac{n \cdot \cancel{(n-1)!}}{\cancel{(n-1)!}} = 64 \\
& (n+1) \cdot n \cdot (n-1) + n = 64 \\
& n((n+1) \cdot (n-1) + 1) = 64 \\
& n \cdot (n^2 - 1 + 1) = 64 \\
& n \cdot n^2 = 64 \\
& n^3 = 64 \\
& n^3 = 4^3 \Rightarrow n = 4 \text{ bulunur.}
\end{aligned}$$

Cevap: A

$$\begin{aligned}
11. \quad & \frac{29}{x} + \frac{4x}{5} = \frac{47}{x} + \frac{3x}{10} \\
& \frac{4x}{5} - \frac{3x}{10} = \frac{47}{x} - \frac{29}{x} \\
& \frac{8x - 3x}{10} = \frac{18}{x} \\
& \frac{5x}{10} = \frac{18}{x} \\
& x^2 = 36 \\
& x = \mp 6 \\
& x = 6 \text{ bulunur.}
\end{aligned}$$

Cevap: E

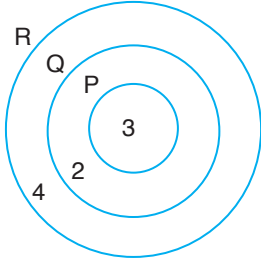
$$\begin{aligned}
12. \quad & \text{gof}(x) = g(f(x)) = 3f(x) + 4 \\
& g(x) = 3x + 4 \\
& g(4) = 3 \cdot 4 + 4 = 16 \\
& \text{fog}(x) = f(g(x)) = \frac{g(x)}{4} + 7 \\
& f(x) = \frac{x}{4} + 7 \\
& \text{fog}(4) = f(g(4)) = f(16) \\
& f(16) = \frac{16}{4} + 7 \\
& f(16) = 4 + 7 = 11
\end{aligned}$$

Cevap: E

13. * $f(2x + 3) = -5x + 2a - 1$
 $x = -1$ için
 $f(-2 + 3) = -5 \cdot (-1) + 2a - 1$
 $8 = 5 + 2a - 1$
 $4 = 2a \Rightarrow a = 2$
 $f(2x + 3) = -5x + 4 - 1$
 $f(2x + 3) = -5x + 3$
 $x = 1$ için
 $f(5) = -5 + 3$
 $f(5) = -2$ bulunur.

Cevap: E

14. $P \subset Q \subset R$
 $n(P) = 3$, $n(Q) = 5$, $n(R) = 9$



$$n(P \cup Q) + n(P \cap R) = 5 + 3 = 8$$

15. $(8,3 + 4,3)^2 - 4 \cdot (8,3) - (4,3)$
 $a = 8,3$, $b = 4,3$
 $= (a + b)^2 - 4a \cdot b$
 $= a^2 + 2ab + b^2 - 4ab$
 $\Rightarrow a^2 - 2ab + b^2 = (a - b)^2$
 $(8,3 - 4,3)^2 = (4)^2 = 16$ bulunur.

Cevap: C

16. $24 \div 6 = 4$ $8 \times 7 = 56$ $28 - 7 = 21$
 $4 \times 5 = 20$ $456 - 6 = 50$ $21 \div 3 = 50$
 $20 - 11 = 9$ $50 \div 10 = 5$ $7 \times 4 = 28$
 $\blacktriangle \rightarrow \div$, $\ast \rightarrow \times$, $\bullet \rightarrow -$
 $35 \div 5 = 7$
 $7 - 2 = 5$
 $5 \times 8 = 40$

Cevap: E

17. $5^{x+1} = 15^x$
 $5^x \cdot 5^1 = 3^x \cdot 5^x$
 $3^x = 5$ ve $3^{x \cdot \frac{1}{x}} = 5^{\frac{1}{x}}$
O halde
 $9^x \cdot 5^{\frac{1}{x}} = (3^x)^2 \cdot 5^{\frac{1}{x}}$
 $= (5)^2 \cdot 3$
 $= 25 \cdot 3$
 $= 75$

Cevap: E

18. $A = \{x / 0 < x \leq 10 \quad x \in \mathbb{Z}^+\}$
 $A = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$
 $B = \{y / y = 2k : 0 < k \leq 10 \quad x \in \mathbb{Z}^+\}$
 $B = \{2, 4, 6, 8, 10\}$
• $(A \cap B) = \{2, 4, 6, 8, 10\}$
 $n(A \cap B) = 5$

Cevap: B

19. $P(x) = ax^2 + bx + c$
 $P(1) = 0$
 $a + b + c = 0 \Rightarrow c = -a - b$
 $P(2) = 0$
 $4a + 2b + c = 0$
 $4a + 2b - a - b = 0$
 $3a + b = 0$
 $b = -3a$
 $\frac{b}{a} = -3$ bulunur.

Cevap: A

20. $P(x) = (x^2 - 16) \cdot Q(x) + 3x$
 $(x^2 - 16) \cdot Q(x) + 3x \mid \begin{array}{l} (x + 4) \\ \hline (x - 4) \cdot Q(x) + 3 \end{array}$
 $- (x^2 - 16 \cdot Q(x))$
 $3x$
 $+$
 $- / 3x + 12$
 -12 bulunur.

Cevap: E

$$\begin{array}{r} 21. \quad ABC \quad C = 9 \\ + \quad A4 \quad B = 1 \\ \hline C03 \quad A = 8 \end{array}$$

$$\begin{array}{r} 819 \\ + \quad 84 \\ \hline 903 \end{array}$$

$$A.B.C = 8.1.9 = 72$$

Cevap: D

$$22. \quad \left(x + \textcircled{3} + \frac{3}{x+3}\right)^2 = (3 + \textcircled{3})^2$$

$$(x+3)^2 + \frac{9}{(x+3)^2} + 2 \cdot (x+3) \cdot \frac{3}{x+3} = 36$$

$$(x+3)^2 + \frac{9}{(x+3)^2} = 36 - 6 = 30$$

Cevap: C

$$23. \quad |15 - a| = 11 + a$$

$$\begin{aligned} \text{i) } 15 - a &= 11 + a \\ 4 &= 2a \\ 2 &= a \end{aligned}$$

$$* \quad |x - 2| = x - 6$$

$$\begin{aligned} \text{i) } x - 2 &= x - 6 \\ 2 &\neq 6 \end{aligned}$$

$$\begin{aligned} \text{ii) } 15 - a &= -11 - a \\ 15 &\neq -11 \end{aligned}$$

$$\begin{aligned} \text{ii) } x - 2 &= -x + 6 \\ 2x &= 8 \\ x &= 4 \end{aligned}$$

Cevap: D

$$24. \quad x^2 + (a+2)x + 8 = 0$$

$$x_1^2 \cdot x_2 + x_2^2 \cdot x_1 = 16$$

$$x_1 \cdot x_2 (x_1 + x_2) = 16$$

$$\begin{array}{c} \downarrow \quad \downarrow \\ 8 \cdot (-a - 2) = 16 \end{array}$$

$$-a - 2 = 2$$

$$-2 - 2 = a$$

$$-4 = a \text{ bulunur.}$$

Cevap: A

$$25. \quad \left(\frac{1}{b} - \frac{1}{a}\right) \cdot \left(\frac{1}{b} + \frac{1}{a}\right) = \frac{6}{49}$$

$$\left(\frac{1}{b} - \frac{1}{a}\right) \cdot \frac{6}{7} = \frac{6}{49}$$

$$\frac{1}{b} - \frac{1}{a} = \frac{1}{7}$$

$$+ \quad \frac{1}{a} + \frac{1}{b} = \frac{6}{7}$$

$$\frac{2}{b} = \frac{7}{7} = 1$$

$$b = 2$$

$$\frac{1}{2} + \frac{1}{a} = \frac{6}{7}$$

$$\frac{1}{a} = \frac{6}{7} - \frac{1}{2} = \frac{12-7}{14} = \frac{5}{14} \Rightarrow a = \frac{14}{5}$$

$$\Rightarrow a.b = \frac{14}{5} \cdot 2 = \frac{28}{5} \text{ bulunur.}$$

Cevap: D

$$26. \quad x - y = 12$$

$$-1/y + z = 8$$

$$-2/z - v = 5$$

$$x - y = 12$$

$$-y - z = -8$$

$$+ \quad -2z + 2v = -10$$

$$x - 2y - 3z + 2v = -6 \text{ bulunur.}$$

Cevap: B

$$27. \quad \frac{5}{x} = \frac{7}{y} = \frac{1}{k} \quad x = 5k$$

$$y = 7k \text{ alınabilir.}$$

$$x^2 + y^2 = (5k)^2 + (7k)^2 = 148$$

$$25k^2 + 49k^2 = 148$$

$$74k^2 = 148$$

$$k^2 = 2$$

$$k = \sqrt{2}$$

$$x + y = 5k + 7k = 12k = 12\sqrt{2}$$

Cevap: C

28.

$$|a + 2| = 7$$

$$|b - 4| = 5$$

$$a + 2 = 7 \text{ ve } a + 2 = -7 \quad b - 4 = 5 \text{ ve } b - 4 = -5$$

$$a = 5 \quad a = -9 \quad b = 9 \quad b = -1$$

a + b toplamının en büyük olabilmesi için

a = 5 ve b = 9 alınır.

Max(a + b) = 5 + 9 = 14 bulunur.

Cevap: D

29. z < y < x olduğuna göre

$$\frac{x}{y} + z = 8, \quad z = 1, \quad y = 2 \text{ seçilirse}$$

$$\frac{x}{2} + 1 = 8$$

$$\frac{x}{2} = 7 \Rightarrow x = 14$$

x.z = 14.1 = 14 bulunur.

Cevap: E

30. $(97)_{10} = (241)_m$

$$97 = 2m^2 + 4m + 1$$

$$96 = 2m(m + 2)$$

$$48 = \underbrace{m}_{6} \cdot \underbrace{(m + 2)}_8$$

m = 6 bulunur.

Cevap: C

31.

$$3^a \cdot 4^{-b} = 4$$

$$x \quad 3^{-b} \cdot 4^a = 36$$

$$3^{a-b} \cdot 4^{a-b} = 4 \cdot 4 \cdot 9$$

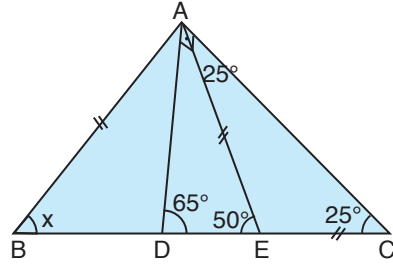
$$3^{a-b} \cdot 4^{a-b} = 4^2 \cdot 3^2$$

$$12^{a-b} = 12^2$$

a - b = 2 bulunur.

Cevap: D

32.



$$m(\widehat{ADC}) + m(\widehat{ACD}) = 90^\circ$$

$$65^\circ + m(\widehat{ACD}) = 90^\circ$$

$$m(\widehat{ACD}) = 90^\circ - 65^\circ = 25^\circ$$

$$|AE| = |EC| \text{ olduğundan } m(\widehat{EAC}) = 25^\circ$$

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

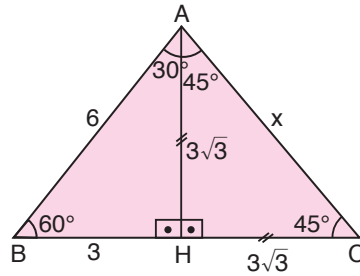
$$|AB| = |AE| \text{ olduğundan}$$

$$m(\widehat{ABC}) = 50^\circ \text{ bulunur.}$$

Cevap: B

TASARI EĞİTİM YAYINLARI

33.



Cevap: C

A noktasından [BC] kenarına dik çizersek, ABH üçgeni(30°, 60°, 90°) dik üçgeni olur.

Bu durumda;

$$|AB| = 6 \text{ ise } |BH| = 3 \text{ ve } |AH| = 3\sqrt{3} \text{ olur.}$$

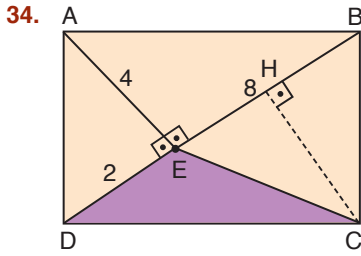
$$m(\widehat{HAC}) = 75 - 30 = 45^\circ \text{ bulunur.}$$

AHC ikizkenar dik üçgen olduğundan

Hipotenüs dik kenarın $\sqrt{2}$ katıdır.

$$x = 3\sqrt{3} \cdot \sqrt{2} = 3\sqrt{6} \text{ bulunur.}$$

Cevap: C



ABD üçgeninde öklid bağıntısından
 $|DE| \cdot 8 = 4^2$, $|DE| = 2$ cm olur.

[CH] [DB] çizersek

DAB ile BCD eş üçgen olduğundan

$$|AE| = |CH| = 4 \text{ cm}$$

$$A(DEC) = \frac{|DE| \cdot |CH|}{2}$$

$$= \frac{2 \cdot 4}{2} = 4 \text{ cm}^2 \text{ olur.}$$

Cevap: B

35. Köşegenleri dik kesişen dörtgenlerde karşılıklı kenarların kareleri toplamı eşittir.

$$x^2 + 6^2 = 4^2 + 9^2$$

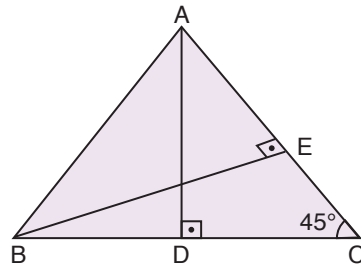
$$x^2 + 36 = 16 + 81$$

$$x^2 = 61$$

$$x = \sqrt{61} \text{ cm}$$

Cevap: A

36.



ABC üçgeninin alanını iki farklı şekilde yazıp eşitleyelim.

$$\frac{|BC| \cdot |AD|}{2} = \frac{|AC| \cdot |BE|}{2}$$

$$\frac{12 \cdot |AD|}{2} = \frac{16 \cdot 9}{2}$$

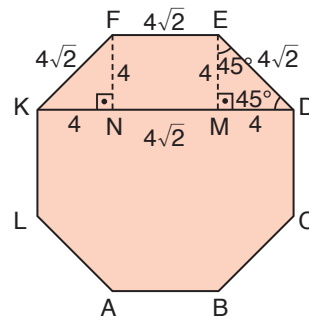
$$12 \cdot |AD| = 16 \cdot 9$$

$$|AD| = 12 \text{ cm bulunur.}$$

Cevap: D

TASARI EĞİTİM YAYINLARI

37.



Düzgün sekizgenin bir iç açısı 135° ve KDEF ikizkenar yamuk olur.

(45° , 45° , 90°) ikizkenar dik üçgeninden

$$|EM| = |MD| = |KN| = |FN| = 4 \text{ cm olur.}$$

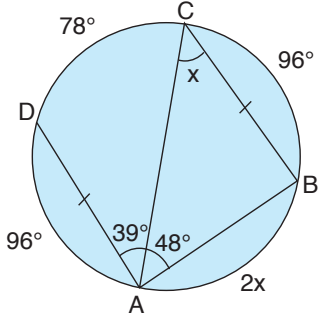
$$|ED| = |EF| = |NM| = 4\sqrt{2}$$

O halde

$$|KD| = 4 + 4\sqrt{2} + 4 = 8 + 4\sqrt{2} \text{ cm olur.}$$

Cevap: E

38.



$|AD| = |BC|$ olduğundan
 $m(\widehat{DA}) = 96^\circ$ olur.

$$2x + 96 + 78 + 96 = 360$$

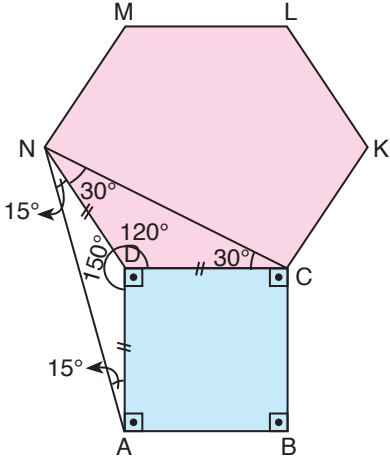
$$2x = 360 - 270$$

$$2x = 90^\circ$$

$$x = 45^\circ \text{ bulunur.}$$

Cevap: C

39.



Altıgende köşe açıları 120° dir.

$m(\widehat{NDC}) = 120^\circ$ $|ND| = |DC|$ olduğundan

NDC üçgeni ikizkenar olur.

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

$$m(\widehat{NDA}) \text{ açısı } 120^\circ + 90^\circ + m(\widehat{NDA}) = 360^\circ$$

$$m(\widehat{NDA}) = 150^\circ$$

NDA üçgeninin ikizkenar

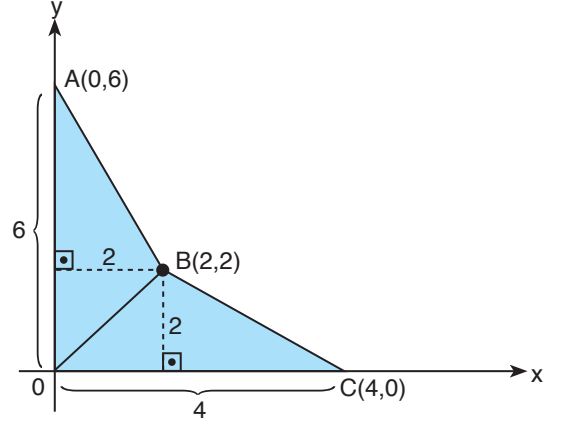
$$m(\widehat{DNA}) = m(\widehat{DAN}) = 15^\circ$$

O halde

$$m(\widehat{ANC}) = 15 + 30 = 45^\circ \text{ dir.}$$

Cevap: C

40.



$$A(OBC) + A(OBA) = \frac{4 \cdot 2}{2} + \frac{6 \cdot 2}{2}$$

$$= 4 + 6$$

$$= 10 \text{ br}^2$$

Cevap: A