

1.  $ax^2 + bx + c = 0$

$$x_1 + x_2 = \frac{-b}{a}$$

O halde  $mx^2 - (2m + 6)x + n = 0$

$$x_1 + x_2 = 3 = \frac{-(-(2m + 6))}{m}$$

$$3m = 2m + 6$$

$$m = 6 \text{ bulunur.}$$

Cevap: E

2.  $f(x) = 6x^2 - 4x - 1$

$$f(x_1) = f(x_2) = 0$$

$$= \frac{1}{3+x_1} + \frac{1}{3+x_2}$$

$$= \frac{3+x_2+3+x_1}{(3+x_1)(x_2+3)} = \frac{6+x_1+x_2}{3x_2+9+x_1 \cdot x_2+3x_1}$$

$$= \frac{6+x_1+x_2}{3(x_1+x_2)+x_1 \cdot x_2+9}$$

$$x_1 + x_2 = \frac{-b}{a} = \frac{-(-4)}{6} = \frac{4}{6} = \frac{2}{3}$$

$$x_1 \cdot x_2 = \frac{c}{a} = \frac{-1}{6}$$

O halde

$$= \frac{6 + \frac{2}{3}}{3 \cdot \frac{2}{3} - \frac{1}{6} + 9} = \frac{\frac{20}{3}}{\frac{12-1+54}{6}} = \frac{4}{3} \cdot \frac{2}{65}$$

$$= \frac{8}{13}$$

Cevap: A

3.  $f(x) = x^2 - mx + 2m - 6$

$$\frac{1}{x_1} + \frac{1}{x_2} = \frac{1}{4}$$

$$x_1 + x_2 = \frac{-b}{a}$$

$$\frac{x_2 + x_1}{x_1 \cdot x_2} = \frac{1}{4}$$

$$x_1 \cdot x_2 = \frac{c}{a}$$

$$\frac{-(-m)}{\frac{1}{2m-6}} = \frac{1}{4}$$

$$\frac{m}{2m-6} = \frac{1}{4}$$

$$\Rightarrow 4m = 2m - 6$$

$$2m = -6$$

$$m = -3 \text{ bulunur.}$$

Cevap: B

4.  $f(x) = x^2 - (m-1)x - 2$

$$(x_1 + 3)(x_2 + 3) = 13$$

$$x_1 \cdot x_2 + 3(x_1 + x_2) + 9 = 13$$

$$\underbrace{x_1 \cdot x_2}_{\frac{c}{a}} + 3 \cdot \underbrace{(x_1 + x_2)}_{\frac{-b}{a}} = 4$$

$$\frac{-2}{1} + 3 \cdot \left( \frac{m-1}{1} \right) = 4$$

$$3(m-1) = 4 + 2 = 6$$

$$m-1 = 2$$

$$m = 2 + 1 = 3 \text{ bulunur.}$$

Cevap: C

5.  $x^3 - 4^3 = (x - 4)(x^2 + 4x + 16)$   
 $x^3 - x = 60$   
 $x^3 - 60 = x$  (her iki tarafa  $(-4)$  ekleyelim)  
 $x^3 - 60 - 4 = x - 4$   
 $x^3 - 4^3 = (x - 4)$   
 $(x - 4) = (x - 4)(x^2 + 4x + 16)$   
 $x^2 + 4x + 16 = 1$  olur.

O halde

$$\underbrace{x^2 + 4x + 16 + 11}_1 = 12 \text{ bulunur.}$$

Cevap: B

6.  $x^3 = 28$   
 $x^3 = 27 + 1$   
 $x^3 - 27 = 1$   
 $x^3 - 3^3 = 1$   
 $(x - 3)(x^2 + 3x + 9) = 1$   
 $(x - 3) = \frac{1}{x^2 + 3x + 9}$  bulunur.

Cevap: D

7.  $x + 1 = \frac{x^2}{2} \Rightarrow x^2 = 2x + 2$  yazılabilir.  
 $\left(\frac{x^2}{2}\right)^2 + 3\left(\frac{x^2}{2}\right) - x(x^2 + 1)$   
 $= (x + 1)^2 + 3(x + 1) - x(2x + 2 + 1)$   
 $= x^2 + 2x + 1 + 3x + 3 - 2x^2 - 3x$   
 $= -x^2 + 2x + 4$   
 $= -(2x + 2) + 2x + 4$   
 $= -2x - 2 + 2x + 4$   
 $= 2$  bulunur.

Cevap: B

8.  $\left(x - \frac{2}{x}\right)^2 = x^2 + \frac{4}{x^2} - 4$   
 $\left(x - \frac{2}{x}\right)^2 = 29 - 4 = 25$   
 $x - \frac{2}{x} = 5$   
 $x^2 - 2 = 5x$   
 $x^2 - 5x = 2$  bulunur.

Cevap: A

9.  $f(x) = x^2 - 8x + a$   
 $\frac{1}{c} + \frac{1}{d} = \frac{2}{3}$   
 $\frac{c+d}{c.d} = \frac{2}{3}$   
 $\frac{-\left(\frac{-8}{1}\right)}{\frac{a}{1}} = \frac{2}{3}$   
 $\frac{8}{a} = \frac{2}{3}$   
 $a = 12$

Cevap: C

10.  $f(x) = x^2 - 2x + 5m + 1$

$$x_1 + x_2 = \frac{-b}{a} = \frac{-(-2)}{1} = 2$$

$$- / \quad x_1 + x_2 = 2$$

$$x_1 + 2x_2 = -2$$

$$-x_1 - x_2 = -2$$

$$+ \quad x_1 + 2x_2 = -2$$

$$x_2 = -4 \text{ ise } x_1 = 6 \text{ olur.}$$

$$x_1 \cdot x_2 = \frac{c}{a} = \frac{5m+1}{1}$$

$$\rightarrow (-4) \cdot 6 = 5m + 1$$

$$-24 = 5m + 1$$

$$-25 = 5m$$

$$-5 = m \text{ bulunur.}$$

Cevap: A

11.  $9^{x+1} - 12 \cdot 3^x + 3 = 0$

$$(3^x)^2 \cdot 9 - 12 \cdot 3^x + 3 = 0 \quad (3^x = a \text{ olsun})$$

$$9a^2 - 12a + 3 = 0$$

$$3a \quad -3 = 0 \quad \Rightarrow \quad a = 1$$

$$3a \quad -1 = 0 \quad \Rightarrow \quad a = \frac{1}{3}$$

$$3^x = 1 \quad \text{ve} \quad 3^x = \frac{1}{3} = 3^{-1}$$

$$3^x = 3^0 \quad x = -1$$

$$x = 0$$

$$0 - 1 = -1 \text{ bulunur.}$$

Cevap: E

12.  $2^{2x+1} - 9 \cdot 2^x + 4 = 0 \quad (2^x = a \text{ olsun})$

$$(2^x)^2 \cdot 2 - 9 \cdot 2^x + 4 = 0$$

$$2a^2 - 9a + 4 = 0$$

$$\downarrow \quad \downarrow$$

$$2a \quad -1 = 0$$

$$a = \frac{1}{2}$$

$$a \quad -4 = 0$$

$$a = 4$$

$$2^x = \frac{1}{2} = 2^{-1} \quad \text{ve} \quad 2^x = 4 = 2^2$$

$$x = -1$$

$$x = 2$$

$$\Sigma x = -1 + 2 = 1 \text{ bulunur.}$$

Cevap: C

TASARI EĞİTİM YAYINLARI

13.  $f(x) = x^2 - 3x + 2m + 1$

$$x_1^2 + x_2^2 = (x_1 + x_2)^2 - 2x_1 \cdot x_2$$

$$7 = (3)^2 - 2 \cdot (2m + 1)$$

$$7 = 9 - 4m - 2$$

$$4m = 0$$

$$m = 0 \text{ bulunur.}$$

Cevap: C

14.  $f(x) = x^2 - 2x + k$

$$\underbrace{x_1 + x_2}_{\frac{-b}{a}} + \underbrace{x_1 \cdot x_2}_{\frac{c}{a}} = 5$$

$$\downarrow \quad \downarrow$$

$$2 + k = 5$$

$$k = 3 \text{ bulunur.}$$

Cevap: C

$$15. \quad \left(x^2 - \frac{4}{x^2}\right) \cdot \left(\frac{x^2}{3x+2}\right) = \frac{x^2+2}{x}$$

$$\left(\frac{x^4-4}{x^2}\right) \cdot \left(\frac{x^2}{3x+2}\right) = \frac{x^2+2}{x}$$

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

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

$$x^2-2 = 3x+2$$

$$x^2-3x-4 = 0$$

Köklerimiz  $x_1 = 4$  ve  $x_2 = -1$   
 $x > 0$  olduğundan  $x = 4$  bulunur.

Cevap: D

$$16. \quad a^4 - 2a^2 = 8$$

$$a^4 - 2a^2 - 8 = 0 \quad (a^2 = x \text{ olsun})$$

$$x^2 - 2x - 8 = 0$$

$$(x-4)(x+2) = 0$$

$$x_1 = 4 \quad \text{ve} \quad x = -1$$

$a \in \mathbb{R}^+$  dan  
 $a^2 = 4$   
 $a^2 = 2^2$   
 $a = 2$  bulunur.

Cevap: E

$$17. \quad \frac{x-1}{x-3} + \frac{x-1}{x-5} = 0$$

$$\frac{x^2-5x-x+5+x^2-x-3x+3}{(x-5)(x-3)} = 0$$

$$2x^2-10x+8 = 0$$

$$x^2-5x+4 = 0$$

$$x_1 + x_2 = \frac{-b}{a} = \frac{-(-5)}{1}$$

$$= 5$$

Cevap: A

$$18. \quad (2x+1)^2 \leq 9$$

$$(2x+1)^2 \leq 3^2$$

Buna göre

$$|2x+1| \leq 3$$

$$-3 \leq 2x+1 \leq 3$$

$$-3-1 \leq 2x \leq 3-1$$

$$-4 \leq 2x \leq 2$$

$$-2 \leq x \leq 1$$

$x$ 'in alabileceği tamsayı değerleri  $-2, -1, 0, 1$   
 Bunların toplamı ise  
 $\sum x = -2 - 1 + 0 + 1 = -2$

Cevap: B

$$19. \quad a < b < 0$$

$$c = \frac{3a-b}{a}$$

$$\Rightarrow c = \frac{3a}{a} - \frac{b}{a}$$

$$c = 3 - \frac{b}{a}$$

$$\frac{b}{a} = 3 - c$$

 $\frac{b}{a}$  kesri 1'den küçük pozitif bir kesir olacağından

$$0 < \frac{b}{a} < 1$$

O halde  $c$ 'nin en geniş aralığını bulmak için  $\frac{b}{a}$  yerine

$$0 < 3 - c < 1$$

$$-3 < -c < 1 - 3$$

$$-3 < -c < -2 \Rightarrow 2 < c < 3 \text{ olur.}$$

Cevap: B

$$20. \quad x \in \mathbb{Z}$$

$$\frac{x^2+x-6}{x-2} > 0$$

$$\frac{(x+3)(\cancel{x-2})}{(\cancel{x-2})} > 0$$

$$x+3 > 0$$

$$x > -3 \text{ tür.}$$

Buna göre  $x$ 'in alabileceği en küçük tamsayı değeri  $-2$ 'dir.

Cevap: C