

1.  $P(x) = (x - 1)^a \cdot (x + 2)^b$

$$P(2) = 1^a \cdot (4)^b = 4^b$$

$$P(-1) = (-2)^a \cdot 1^b = (-2)^a$$

$$4^b \cdot (-2)^a = 64$$

$$2^{2b} \cdot 2^a = 2^6$$

$$2b + a = 6$$

$$\begin{array}{r} \downarrow \quad \downarrow \\ 1 \quad 4 \end{array}$$

$$\Rightarrow a + b = 4 + 1 = 5 \text{ bulunur.}$$

Cevap: D

2.  $(x + 1)^2 \cdot P(x) = mx^4 + nx^2 + (1 - 2m)x + 3n$

$$P(0) = 3 \text{ verilmiş.}$$

$$x = 0 \text{ için}$$

$$1 \cdot P(0) = 0 + 0 + 0 + 3n$$

$$3 = 3n$$

$$1 = n$$

$$x = -1 \text{ için}$$

$$0 \cdot \underbrace{P(-1)} = m + n - (1 - 2m) + 3n$$

$$0 = m + n - 1 + 2m + 3n$$

$$= 3m + 4n - 1$$

$$= 3m + 4 - 1$$

$$-3 = 3m$$

$$-1 = m \text{ olur.}$$

$$O \text{ halde } m + n = -1 + 1 = 0 \text{ bulunur.}$$

Cevap: C

3.  $P(x - 1) = ax^2 - 4x + b$

$$Q(x) = P(x - 2) + 1$$

$$x = 3 \text{ için}$$

$$Q(3) = P(1) + 1$$

$$4 = P(1) + 1 \rightarrow P(1) = 3$$

$$x = 2 \text{ için}$$

$$P(1) = 4a - 8 + b = 3$$

$$11 = 4a + b \text{ olur.}$$

$$x = 2 \text{ için}$$

$$Q(2) = P(0) + 1$$

$$5 = P(0) + 1 \Rightarrow P(0) = 4$$

$$x = 1 \text{ için}$$

$$P(0) = a - 4 + b = 4$$

$$a + b = 8$$

$$\begin{array}{r} -1/ \\ a + b = 8 \end{array}$$

$$\underline{4a + b = 11}$$

$$3a = 3 \Rightarrow a = 1 \text{ ve } b = 7$$

$$P(x - 1) = x^2 - 4x + 7$$

$$x = 6 \text{ için}$$

$$P(5) = 36 - 24 + 7 = 19$$

Cevap: B

4.  $P(x) = (x^3 + 2x^2 - 3x + 2) \cdot Q(x) + x + 1$

$$\begin{array}{r|l} P(x) & x - 1 \\ \hline & 6 \end{array} \quad \begin{array}{r|l} Q(x) & x - 1 \\ \hline & K \end{array}$$

$$x - 1 = 0$$

$$x = 1$$

$$P(1) = 6$$

$$Q(1) = k = ?$$

$$x = 1 \text{ için}$$

$$P(1) = (1 + 2 - 3 + 2) \cdot Q(1) + 1 + 1$$

$$6 = 2 \cdot Q(1) + 2$$

$$4 = 2Q(1)$$

$$2 = Q(1) = k \text{ bulunur.}$$

Cevap: A

$$\begin{aligned}
 5. \quad x - 2 = 0 \quad & x = 2 \\
 P(x) &= (x + 1)(x + 2)(x + 3)(x - k) \\
 P(x + 3) &\Rightarrow P(5) = 0 \\
 &\downarrow \\
 &2 \\
 \Rightarrow P(5) &= (5 + 1) \cdot (5 + 2) \cdot (5 + 3) \cdot (5 - k) = 0 \\
 &6 \cdot 7 \cdot 8 \cdot (5 - k) = 0 \\
 &5 - k = 0 \\
 &5 = k
 \end{aligned}$$

Cevap: D

$$\begin{aligned}
 6. \quad P(3x - 1) &= (x^2 - 5x + 6) \cdot Q(x + 2) + 4x + 1 \\
 3x - 1 &= 8 \\
 3x &= 9 \\
 x &= 3 \text{ için} \\
 P(3 \cdot 3 - 1) &= (3^2 - 5 \cdot 3 + 6) \cdot Q(3 + 2) + 4 \cdot 3 + 1 \\
 P(8) &= \underbrace{(9 - 15 + 6)}_0 \cdot Q(5) + 13 \\
 P(8) &= 13 \text{ bulunur.}
 \end{aligned}$$

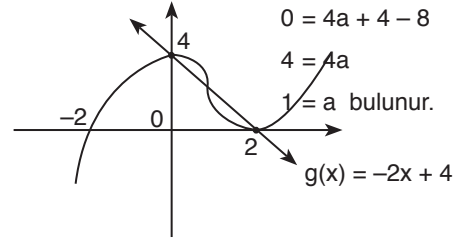
Cevap: E

$$7. \quad (3x - 2) \cdot P(x - 1) = 9ax^2 + 6x + b$$

$$\begin{aligned}
 x = 0 \text{ için} \\
 (-2) \cdot \underbrace{P(-1)}_4 &= 0 + 0 + b \\
 -8 &= b
 \end{aligned}$$

$$x = \frac{2}{3} \text{ için}$$

$$\left(3 \cdot \frac{2}{3} - 2\right) \cdot P\left(\frac{2}{3} - 1\right) = 9a \cdot \frac{4}{9} + 6 \cdot \frac{2}{3} - 8$$



Cevap: A

8.

$$\begin{aligned}
 y = 0 \text{ için} \\
 0 &= -2x + 4 \\
 2x &= 4 \\
 x &= 2
 \end{aligned}$$

$$\begin{aligned}
 x = 0 \text{ için} \\
 y &= 4 \text{ olur.}
 \end{aligned}$$

$$f(x) = a(x + 2)(x - 2)^2$$

$$\begin{aligned}
 x = 0 \text{ için} \\
 \underbrace{f(0)}_4 &= a \cdot 2 \cdot 4
 \end{aligned}$$

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

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

$$f(6) = \frac{1}{2} \cdot 8 \cdot 16 = 64 \text{ bulunur.}$$

Cevap: A

$$9. \quad P(x) = x^2 + ax + b$$

$$Q(x) = x.P(x) + 2$$

$x = -1$  için

$$\underbrace{Q(-1)}_0 = -1.P(-1) + 2$$

$$0 = -P(-1) + 2$$

$$P(-1) = 2$$

$x = 1$  için

$$\underbrace{Q(1)}_0 = 1.P(1) + 2$$

$$P(1) = -2$$

$x = 2$  için

$$\underbrace{Q(2)}_0 = 2.P(2) + 2$$

$$P(2) = -1$$

$$* \quad \frac{P(-1)}{2} = 1 - a + b \Rightarrow b - a = 1$$

$$\frac{P(1)}{-2} = 1 + a + b \Rightarrow \frac{a + b = -3}{2b = -2} \Rightarrow b = -1$$

$$\text{ve } a = -2$$

$$P(x) = x^2 - 2x - 1 \Rightarrow P(-2) = 4 + 4 - 1 = 7 \text{ bulunur.}$$

**Cevap: A**

$$10. \quad P(x) = 3x^3 - 2x^2 - 4x + 5$$

$$Q(x) = x - 2$$

$$\begin{array}{r} P(x) \quad | \quad Q(x) \\ \hline - \quad \quad \quad | \quad \quad \quad \\ \hline K \end{array}$$

$$x - 2 = 0$$

$x = 2$   $P(x)$ 'de yerine yazılarak kalan bulunur.

$$K = 24 - 8 - 8 + 5$$

$$K = 13 \text{ bulunur.}$$

**Cevap: C**

$$11. \quad (x + 2).P(x) = x^3 + ax - 8$$

$x = -2$  için

$$\underbrace{(-2 + 2).P(-2)}_0 = -8 - 2a - 8$$

$$2a = -16$$

$$a = -8$$

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

$$P(x) = \frac{x^3 - 8x - 8}{x + 2}$$

$$\begin{array}{r} x^3 - 8x - 8 \quad | \quad x + 2 \\ -/ \quad x^3 + 2x^2 \quad | \quad x^2 - 2x - 4 \\ \hline -2x^2 - 8x - 8 \\ + -/ \quad -2x^2 - 4x \\ \hline -4x - 8 \\ \hline \mp 4x \mp 8 \\ \hline 0 \end{array}$$

$$\text{O halde } P(x) = x^2 - 2x - 4$$

$$P(-2) = (-2)^2 - 2.(-2) - 4 \\ = 4 + 4 - 4 = 4 \text{ bulunur.}$$

**Cevap: D**

$$12. \quad x - 3 = 0 \Rightarrow x = 3$$

$$P(3) = 7 \text{ ise}$$

$$3^3 - 2.3^2 - a.3 - 5 = 7$$

$$27 - 18 - 3a - 5 = 7$$

$$-3 = 3a$$

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

**Cevap: B**

13.  $P(x) = ax + b$  olsun

$$P(x-1) + P(x+2) = 4x - 4$$

$$a(x-1) + b + a(x+2) + b = 4x - 4$$

$$ax - a + b + ax + 2a + b = 4x - 4$$

$$2ax + a + 2b = 4x - 4$$

$$2a = 4$$

$$a + 2b = -4$$

$$a = 2$$

$$2 + 2b = -4$$

$$2b = -6$$

$$b = -3$$

$$P(x) = 2x - 3 \text{ ve}$$

$$P(5) = 2 \cdot 5 - 3 = 10 - 3$$

$$= 7 \text{ bulunur.}$$

Cevap: E

14.  $P(x) = ax^2 + bx + c$

$$P(1) = a + b + c = 0$$

$$P(2) = 4a + 2b + c = 0$$

$$4a + 2b + c = a + b + c$$

$$3a = -b$$

$$-3 = \frac{b}{a} \text{ bulunur.}$$

Cevap: A

15.  $P(x) = (2x - 3)(x + a)$

$$Q(x) = 2x^2 - x + b$$

$$P(x) = Q(x)$$

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

$$2x^2 + 2ax - 3x - 3a = 2x^2 - x + b$$

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

$$2a - 3 = -1 \text{ ve } -3a = b$$

$$2a = 2 \quad -3 = b$$

$$a = 1$$

$$a + b = 1 - 3 = -2 \text{ bulunur.}$$

Cevap: B

16.  $P(x) = ax + b$

$$P(x) + P(x+2) = 6x + 4$$

$$ax + b + a(x+2) + b = 6x + 4$$

$$ax + b + ax + 2a + b = 6x + 4$$

$$2ax + 2(a + b) = 6x + 4$$

$$2a = 6$$

$$2(a + b) = 4$$

$$a = 3$$

$$a + b = 2$$

$$3 + b = 2$$

$$b = -1$$

O halde

$$P(x) = ax + b = 3x - 1 \text{ dir.}$$

$$P(-2) = 3 \cdot (-2) - 1$$

$$= -6 - 1$$

$$= -7 \text{ olur.}$$

Cevap: A

17.

$$\begin{array}{r} x^2 + x + n \\ \hline 5 \end{array} \Bigg| x + 3$$

Yani  $P(x)$  polinomunun  $(x + 3)$  ile bölümünden kalan 5 ise

$$P(-3) = 5 \text{ tir.}$$

$$x + 3 = 0 \Rightarrow x = -3$$

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

$$5 = 9 - 3 + n$$

$$5 = 6 + n$$

$$-1 = n$$

Cevap: C

$$18. P(-4) = P(-3) = P(5) = 0$$

$$x_1 = -4, \quad x_2 = -3 \quad \text{ve} \quad x_3 = 5$$

$$P(x) = a(x - (-4))(x - (-3))(x - 5)$$

$$P(x) = a(x + 4)(x + 3)(x - 5)$$

$$P(0) = 2 \text{ verildiğine göre,}$$

$$P(0) = a(0 + 4) \cdot (0 + 3)(0 - 5)$$

$$2 = a(-60) \Rightarrow a = -\frac{1}{30}$$

$$P(1) = -\frac{1}{30}(1 + 4)(1 + 3)(1 - 5)$$

$$= -\frac{1}{30} \cdot 5 \cdot 4 \cdot (-4)$$

$$P(1) = \frac{8}{3} \text{ bulunur.}$$

Cevap: D

$$19. P(x) = x^2 + ax + b$$

$$Q(x) = x \cdot P(x) + 2$$

$$Q(-1) = 0 \Rightarrow -1P(-1) + 2 = 0$$

$$P(-1) = 2$$

$$Q(1) = 0 \Rightarrow P(1) + 2 = 0$$

$$P(1) = -2$$

$$Q(2) = 0 \Rightarrow 2 \cdot P(2) + 2 = 0$$

$$2P(2) = -2$$

$$P(2) = -1$$

$$i) P(-1) = 1 - a + b = 2$$

$$b - a = 1$$

$$P(1) = 1 + a + b = -2$$

$$a + b = -3$$

$$b - a = 1$$

$$+ a + b = -3$$

$$\hline 2b = -2$$

$$b = -1 \text{ ve } a = -2 \text{ olur.}$$

$$P(x) = x^2 - 2x - 1$$

$$P(3) = 9 - 6 - 1$$

Cevap: C

$$20. P(x) = x^4 + ax^3 - 12x^2 + bx + c + 1$$

$$(x - 2)^3 \text{ ile tam bölünüyorsa}$$

$$x - 2 = 0$$

$$x = 2$$

$$P(2) = 0, \quad P'(2) = 0 \quad \text{ve} \quad P''(2) = 0$$

$$P'(x) = 4x^3 + 3ax^2 - 24x + b$$

$$P''(x) = 12x^2 + 6ax - 24$$

$$P''(2) = 48 + 12a - 24 = 0$$

$$12a = -24 \Rightarrow a = -2$$

Cevap: C