

Çarpanlara Ayırma

$$1) \begin{cases} x + y = 7 \\ x^2 + y^2 = 25 \end{cases} \text{ ise } x \cdot y = ?$$

- a) -9 b) -6 c) -3 d) 3 e) 12

$$\text{Çöz: } 1 / c // (x + y)^2 = 49 \rightarrow x^2 + 2xy + y^2 = 49$$

$$2x \cdot y = 49 - 25 \rightarrow x \cdot y = 12$$

$$2) \begin{cases} x - y = 4 \\ x \cdot y = 2 \end{cases} \text{ ise } x^3 - y^3 = ?$$

- a) -40 b) -35 c) 20 d) 48 e) 88

$$\text{Çöz: } 2 / c // (x - y)^3 = x^3 - y^3 - 3xy(x - y) = 64 \\ x^3 - y^3 = 64 + 24 = 88$$

$$3) \begin{cases} x + y = 8 \\ xy = 5 \end{cases} \text{ } |x - y| = ??$$

- a) $2\sqrt{2}$ b) $2\sqrt{5}$ c) $2\sqrt{7}$ d) $2\sqrt{11}$ e) $2\sqrt{13}$

$$\text{Çöz: } 3 / d // (x + y)^2 = x^2 + 2xy + y^2 \text{ ve} \\ (x - y)^2 = x^2 - 2xy + y^2 \text{ özdeş} \\ (x - y)^2 = (x + y)^2 - 4xy \rightarrow (x - y)^2 = 64 - 4 \cdot 5 = 44 \\ |x - y| = 2\sqrt{11}$$

4) $16 - (4x - x^2)^2$ polinomunun çarpanlardan biri aşağıdakilerden hangisidir?

- a) $(2 + a)^2$ b) $(2 - a)^2$ c) $(1 - a)^2$
d) $(a - 4)$ e) $(a - 3)^2$

$$\text{Çöz: } 4 / b // 16 - (4x - x^2)^2 = 4^2 - (4x - x^2)^2 \Rightarrow \\ (4 - 4a + a^2) \cdot (4 + 4a - a^2) = (2 - a)^2 \cdot (4 + 4a - a^2)$$

$$5) x^2 + 2x = 2 \text{ ise } \frac{1}{x} \cdot (1 - \frac{1}{x}) = ? \text{ x kaçtır?}$$

- a) $-\frac{2}{3}$ b) $-\frac{1}{3}$ c) $-\frac{1}{2}$ d) 0 e) 1

$$\text{Çöz: } 5 / c // x^2 + 2x = 2 \text{ ise } x^2 = 2 - 2x$$

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

6) $(x^2 + \frac{y}{2})^8$ ifadesinin baştan 3. terimi nedir?

- a) $7x^{12}y^2$ b) $7x^{12}y$ c) $7x y^2$
d) $-7x^{12}y^2$ e) $-7x^{12}y$

$$\text{Çöz: } 6 / a // \text{ Bastan } r + 1 \text{ terim } r + 1 = 3; r = 2 \\ \binom{8}{2} \cdot (x^2)^{n-r} \cdot (\frac{y}{2})^r = \binom{8}{2} \cdot (x^2)^{8-2} \cdot (\frac{y}{2})^2 = \frac{8! \cdot x^{12} \cdot y^2}{6! \cdot 2! \cdot 4}$$

$$7x^{12}y^2$$

7) $(x^4 - \frac{4}{x^2})^6$ ifadesinin sabit terimi nedir?

- a) -3840 b) 4840 c) -3840 d) -4840 e) 500

Çöz: 7 / c //

$$\binom{6}{r} \cdot (x^4)^{6-r} \cdot (\frac{4}{x^2})^r = \binom{6}{r} \cdot (x^4)^{6-r} \cdot (4 \cdot x^{-2})^r =$$

$$x^{24-4r} \cdot x^{-2r} = x^0 \Rightarrow 24 - 6r = 0 \rightarrow r = 4$$

$$\binom{6}{4} \cdot (x^4)^{6-4} \cdot (4 \cdot x^{-2})^4 = \frac{6!}{2! \cdot 4!} \cdot x^8 \cdot x^{-8} = 15 \cdot 2^8 = 3840$$