

Üslü sayılar

$$1) \left(\frac{2}{3}\right)^{2x-3} = \left(\frac{27}{8}\right)^{-4x+1} \text{ ise } x=?$$

- a) -3 b) -2 c) -1 d) 0 e) 1

$$\text{Çöz: } 1/ d // \left(\frac{2}{3}\right)^{2x-3} = \left(\frac{27}{8}\right)^{-4x+1} \Rightarrow$$

$$\left(\frac{2}{3}\right)^{2x-3} = \left[\left(\frac{3}{2}\right)^3\right]^{-4x+1} \Rightarrow \left(\frac{2}{3}\right)^{2x-3} = \left(\frac{2}{3}\right)^{12x-3} \Rightarrow$$

$$2x-3 = 12x-3; x = 0$$

2) $9^x = 8$; $2^y = 243$
ve $x - y = 5$ ise $x^2 + y^2 = ?$

$$\text{Çöz: } 2/ c // 3^{2x} = 2^3 \rightarrow 3 = 2^{\frac{3}{2x}}$$

$$2^y = 3^5 \rightarrow 3 = 2^{\frac{y}{5}} \text{ olup } 2^{\frac{y}{5}} = 2^{\frac{3}{2x}}$$

$$\frac{y}{5} = \frac{3}{2x} \rightarrow 2xy = 15; (x - y)^2 = 5^2; x^2 - 2xy + y^2 = 25$$

$$x^2 + y^2 = 25 + 15 = 40$$

3) $x, \tan e 0,002$
 $\frac{0,002 \cdot 0,002 \cdot 0,002 \dots \dots \dots 0,002}{0,00 \dots \dots \dots 4} = 16 \cdot 10^{-11}$ ise $x = ?$

- $x + 1 \tan e$ sıfırı
a) 8 b) 7 c) 6 d) 5 e) 4

$$\text{Çöz: } 3/c // \frac{(0,002)^x}{4 \cdot \frac{1}{10^{x+1}}} = \frac{2^x}{10^{3x}} \cdot \frac{10^{x+1}}{2^2} = 2^4 \cdot 10^{-11}$$

$$2^{x-2} \cdot 10^{-2x+1} = 2^4 \cdot 10^{-11} \rightarrow x = 6$$

4) $3^{2a+4} > 9^{3a-10}$ eşitliği sağağlayan büyük iki pozitif tamsayıtan toplamı kaçtır?
a) 9 b) 7 c) 6 d) 5 e) 3

$$\text{Çöz: } 4 / a // 3^{2a+4} > 9^{3a-10} \rightarrow 3^{2a+4} > (3)^{6a-20}$$

$$2a + 4 > 6a - 20 \Rightarrow a < 6 \text{ oltuğluđu } 5 + 4 = 9$$

5) $\frac{7}{7^x - 1} + \frac{7}{7^{-x} - 1} = 7 + x$ ise $x = ?$ x kaçtır?

- a) -8 b) -7 c) -2 d) 2 e) 4

$$\text{Çöz: } 5 / b // \frac{7}{7^x - 1} + \frac{7}{7^{-x} - 1} = \frac{7}{7^x - 1} + \frac{7 \cdot 7^x}{1 - 7^x} =$$

$$\frac{7(1 - 7^x)}{7^x - 1} = -7$$

6) $\frac{2^{x-3}}{2^x - 7 \cdot 2^{-2}} = 1$ ise $2^x = ?$

- a) 8 b) 7 c) 6 d) 4 e) 2

$$\text{Çöz: } 6 / e //$$

$$\frac{2^{x-3}}{2^x - 7 \cdot 2^{-2}} = 1 \text{ ise } \frac{\frac{2^x}{8}}{2^x - \frac{7}{4}} = 1 \rightarrow \frac{2^x}{8} = \frac{4 \cdot 2^x - 7}{4}$$

$$2^x = 8 \cdot 2^x - 14 \rightarrow 2^x = 2$$

7) $\frac{1}{3^{n-1}} = 86$ ise n hangi aralıral bulunmalıdır?

- a) $-5 < n < 5$ b) $-4 < n < -3$ c) $-3 < n < 3$,
d) $-2 < n < 1$ e) $-4 < n < 3$

$$\text{Çöz: } 7 / b // \frac{1}{3^{n-1}} = 86 \Rightarrow 3^{-(n-1)} = 3^{-n+1} = 86$$

$$3^4 = 81 < 3^{-n+1} = 86 < 3^5 = 243$$

$$4 < -n + 1 < 5 \rightarrow 3 < -n < 4 \Rightarrow -4 < n < -3$$