

$$1. \quad \frac{(a-b)(a+b)}{\sqrt{a}-\sqrt{b}} = 48$$

$$\frac{a-b}{\sqrt{a}-\sqrt{b}} = 6$$

$$\frac{(\sqrt{a}-\sqrt{b})(\sqrt{a}+\sqrt{b})}{(\sqrt{a}-\sqrt{b})} = 6$$

$$(\sqrt{a}+\sqrt{b})^2 = (6)^2$$

$$\underbrace{a+b}_{8} + 2\sqrt{a.b} = 36$$

$$2\sqrt{a.b} = 28$$

$$(\sqrt{a.b})^2 = (14)^2$$

$$a.b = 196 \text{ bulunur.}$$

Cevap: E

$$2. \quad (\sqrt{a}-\sqrt{b})^2 = (4\sqrt{3})^2$$

$$i) \quad a+b-2\sqrt{a.b} = 48$$

$$ii) \quad a+b+\sqrt{4a.b} = 24$$

$$a+b+2\sqrt{a.b} = 24$$

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$$a+b-2\sqrt{a.b} = 48$$

$$a+b+2\sqrt{a.b} = 24$$

$$\hline 2(a+b) = 72$$

$$a+b = 36 \text{ bulunur.}$$

Cevap: C

$$3. \quad \frac{\sqrt{a.b^2.b}}{\sqrt{b}} + \frac{\sqrt{a^2.b^2}}{\sqrt{a}} = \sqrt{b}$$

$$\frac{b\sqrt{a}.\sqrt{b}}{\sqrt{b}} + \frac{a.b}{\sqrt{a}} = \sqrt{b}$$

$$\frac{b\sqrt{a}}{1} + \frac{a.b}{\sqrt{a}} = \sqrt{b}$$

$$\frac{b.a+a.b}{\sqrt{a}} = \sqrt{b}$$

$$(2(a.b))^2 = (\sqrt{a.b})^2$$

$$4.a^2.b^2 = a.b$$

$$4.a.b = 1$$

$$a.b = \frac{1}{4} \text{ bulunur.}$$

Cevap: A

$$4. \quad (\sqrt{9^{x-2}})^2 = \left(\frac{5}{9}\right)^2$$

$$9^{x-2} = \frac{25}{81}$$

$$9^x \cdot 9^{-2} = \frac{25}{81}$$

$$\frac{9^x}{9^2 = 81} = \frac{25}{81} \Rightarrow (3^x)^2 = (5)^2$$

$$3^x = 5 \text{ olur.}$$

$$27^x = (3^x)^3 = (5)^3 = 125 \text{ bulunur.}$$

Cevap: E

5.  $3^x = 9^y$   
 $3^{x+1} + 9^{y+1} = 972$   
 $(3^x) \cdot 3^1 + 9^y \cdot 9^1 = 972$   
 $9^y \cdot 3 + 9^y \cdot 9 = 972$   
 $12 \cdot 9^y = 972$   
 $9^y = 81$   
 $9^y = 9^2 \Rightarrow y = 2$   
 $3^x = 9^2$   
 $3^x = 3^4$   
 $x = 4$  olur.  
 O halde  $x \cdot y = 4 \cdot 2 = 8$  bulunur.

Cevap: D

6.  $5^x \cdot 5 + \frac{5^x}{25} = 630$   
 $\frac{126 \cdot 5^x}{25} = 630$   
 $126 \cdot 5^x = 630 \cdot 25$   
 $5^x = \frac{630 \cdot 25}{126}$   
 $5^x = 125 = 5^3$   
 $x = 3$  bulunur.

Cevap: C

7.  $a - b = (\sqrt{a} - \sqrt{b})(\sqrt{a} + \sqrt{b})$   $a = \sqrt{a} \cdot \sqrt{a}$   
 $b = \sqrt{b} \cdot \sqrt{b}$

$$\frac{1}{(\sqrt{a} + \sqrt{b})} \cdot \frac{(\sqrt{a} - \sqrt{b}) \cdot (\sqrt{a} + \sqrt{b})}{\sqrt{a} \cdot \sqrt{a} \cdot \sqrt{b} - \sqrt{b} \cdot \sqrt{b} \cdot \sqrt{a}} = \frac{1}{5}$$

$$\frac{(\sqrt{a} - \sqrt{b})}{\sqrt{a} \cdot \sqrt{b} (\sqrt{a} - \sqrt{b})} = \frac{1}{5}$$

$$(\sqrt{a \cdot b})^2 = (5)^2$$

a.b = 25 bulunur.

Cevap: C

8.  $a^2 - b^2 = (a - b)(a + b)$

$$\frac{(3^x)^2 - (3^{-x})^2}{3^x + 3^{-x}} = -80 \cdot 3^x$$

$$\frac{(3^x - 3^{-x})(3^x + 3^{-x})}{(3^x + 3^{-x})} = -80 \cdot 3^x$$

$$3^x - 3^{-x} = -80 \cdot 3^x$$

$$81 \cdot 3^x = 3^{-x}$$

$$3^4 \cdot 3^x = 3^{-x}$$

$$3^{x+4} = 3^{-x} \Rightarrow x + 4 = -x$$

$$2x = -4$$

x = -2 bulunur.

Cevap: B

9.  $7^x \cdot 7 = 35 \Rightarrow 7^x = 5$

$$\frac{(7^x)^2 + 15}{7^x + 5} = \frac{5^2 + 15}{5 + 5} = \frac{25 + 15}{10} = \frac{40}{10}$$

= 4 bulunur.

Cevap: A

10.  $\frac{a - \sqrt{a}}{(a-1)^2} \cdot \frac{a + \sqrt{a}}{a} = 5$

$$\frac{(a^2 - a)}{(a-1)^2 \cdot a} = 5$$

$$\frac{\cancel{a} \cdot (\cancel{a-1})}{(a-1) \cdot (\cancel{a-1}) \cdot \cancel{a}} = 5$$

$$\frac{1}{a-1} = 5$$

$$a - 1 = \frac{1}{5} \Rightarrow a = \frac{1}{5} + 1$$

$$a = \frac{6}{5} \text{ bulunur.}$$

Cevap: C

11.  $\frac{\sqrt{x}}{\sqrt{3}} + \frac{\sqrt{x}}{2\sqrt{3}} + \frac{\sqrt{x}}{3\sqrt{3}} = \frac{11}{3}$

$$\frac{6\sqrt{x} + 3\sqrt{x} + 2\sqrt{x}}{6\sqrt{3}} = \frac{11}{3}$$

$$\frac{11\sqrt{x}}{2\sqrt{3}} = \frac{11}{3}$$

$$\frac{\sqrt{x}}{2\sqrt{3}} = 1$$

$$(\sqrt{x})^2 = (2\sqrt{3})^2$$

$$x = 12 \text{ bulunur.}$$

Cevap: D

12.  $\frac{9^b}{3^a} = \frac{1}{3} \Rightarrow 3^a = 3 \cdot 9^b$

$$3 \cdot 9^b - 9^b = \frac{2}{81}$$

$$2 \cdot 9^b = \frac{2}{81} \Rightarrow 9^b = 9^{-2}$$

$$b = -2 \text{ olur.}$$

$$3^a = 3 \cdot 9^{-2}$$

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

$$3^a = 3^{-3}$$

$$a = -3$$

$$\text{O halde } a \cdot b = (-3) \cdot (-2) = 6 \text{ bulunur.}$$

Cevap: E