

MATEMATİK DEFTERİ
KÖKLÜ SAYILAR - EXTRA

$$\begin{aligned} \text{1.SORU: } \frac{\sqrt{128} - \sqrt{72}}{\sqrt{32}} &= \frac{8\sqrt{2} - 6\sqrt{2}}{4\sqrt{2}} \\ &= \frac{2\sqrt{2}}{4\sqrt{2}} = \frac{1}{2} \end{aligned}$$

Cevap: E

$$\begin{aligned} \text{5.SORU: } \frac{\sqrt{192} - \sqrt{147}}{\sqrt{27} - \sqrt{12}} \\ &= \frac{8\sqrt{3} - 7\sqrt{3}}{3\sqrt{3} - 2\sqrt{3}} = \frac{\sqrt{3}}{\sqrt{3}} = 1 \end{aligned}$$

Cevap: D

$$\begin{aligned} \text{2.SORU: } \frac{\sqrt{32} + \sqrt{18}}{\sqrt{2}} &= \frac{4\sqrt{2} + 3\sqrt{2}}{\sqrt{2}} \\ &= \frac{7\sqrt{2}}{\sqrt{2}} = 7 \end{aligned}$$

Cevap: E

$$\begin{aligned} \text{6.SORU: } \frac{\sqrt{32} - \sqrt{18}}{2\sqrt{2}} \\ &= \frac{4\sqrt{2} - 3\sqrt{2}}{2\sqrt{2}} = \frac{\sqrt{2}}{2\sqrt{2}} = \frac{1}{2} \end{aligned}$$

Cevap: A

$$\begin{aligned} \text{3.SORU: } \frac{\sqrt{2} \cdot \sqrt{5}}{\frac{\sqrt{8}}{\sqrt{10}}} &= \frac{\sqrt{2} \cdot \sqrt{5} \cdot \sqrt{10}}{\sqrt{8}} \\ &= \sqrt{\frac{2 \cdot 5 \cdot 10^5}{8}} = \sqrt{\frac{25}{2}} \\ &= \frac{5}{\sqrt{2}} \end{aligned}$$

Cevap: B

$$\begin{aligned} \text{7.SORU: } \frac{\sqrt{2}}{\frac{\sqrt{3} - \sqrt{2}}{(\sqrt{3} + \sqrt{2})}} : (\sqrt{6} + 2) \\ \frac{\sqrt{6} + 2}{3 - 2} \cdot \frac{1}{\sqrt{6} + 2} = \frac{\sqrt{6} + 2}{\sqrt{6} + 2} = 1 \end{aligned}$$

Cevap: C

$$\begin{aligned} \text{4.SORU: } \frac{2\sqrt{81} - \sqrt{36}}{2} &= \frac{2 \cdot 9 - 6}{2} = \frac{18 - 6}{2} \\ &= \frac{12}{2} \\ &= 6 \end{aligned}$$

Cevap: C

$$\begin{aligned} \text{8.SORU: } 27^x &= 7 \\ (3^3)^x &= 7 \\ (3^x)^3 &= 7 \\ \sqrt[3]{(3^x)^3} &= \sqrt[3]{7} \\ 3^x &= \sqrt[3]{7} \end{aligned}$$

Cevap: B

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9.SORU: $\sqrt[x]{27} = 3$

$$\sqrt[x]{3^3} = 3$$

$$3^{\frac{3}{x}} = 3^1$$

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

$$x = 3$$

Cevap: B

10.SORU: $a = \sqrt{2}-1$ $b = \sqrt{2}+1$

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

Cevap: A

11.SORU: $\sqrt[4]{3^x} = 9$

$$3^{\frac{x}{4}} = 3^2$$

$$\frac{x}{4} = 2$$

$$x = 8$$

Cevap: E

12.SORU: $a^{0,5} = 3$

$$a^{\frac{5}{10}} = 3$$

$$a^{\frac{1}{2}} = 3$$

$$\sqrt{a} = 3$$

$$a = 9$$

Cevap: C

13.SORU: $\frac{\sqrt{2}}{\sqrt{2}-1} = \frac{\sqrt{2} \cdot (\sqrt{2}+1)}{2-1}$

$$= 2 + \sqrt{2}$$

Cevap: C

14.SORU: $a = 3\sqrt{6}$ $b = 4\sqrt{3}$ $c = 5\sqrt{2}$

$$a^2 = 9 \cdot 6 = 54$$

$$b^2 = 16 \cdot 3 = 48$$

$$c^2 = 25 \cdot 2 = 50$$

$$b^2 < c^2 < a^2 \Rightarrow b < c < a$$

Cevap: D

15.SORU: $\frac{\sqrt{0,81} - \sqrt{0,04}}{0,1}$

$$= \frac{\sqrt{\frac{81}{100}} - \sqrt{\frac{4}{100}}}{0,1} = \frac{\frac{9}{10} - \frac{2}{10}}{0,1} = \frac{\frac{7}{10}}{0,1}$$
$$= \frac{0,7}{0,1} = \frac{7}{1} = 7$$

Cevap: A

16.SORU: $\sqrt[3]{64^2} = ((2^6)^2)^{\frac{1}{3}}$

$$= (2^{12})^{\frac{1}{3}}$$
$$= 2^4 = 16$$

Cevap: B

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17.SORU: $x = \sqrt[3]{2}$ $y = \sqrt{3}$ $z = \sqrt[6]{4}$

$$x^6 = 2^2 = 4$$

$$y^6 = 3^3 = 27$$

$$z^6 = 4$$

$$x^6 = z^6 < y^6$$

$$x = z < y$$

Cevap: C

21.SORU: $\frac{2\sqrt{27} + \sqrt{3}}{\sqrt{12}}$

$$= \frac{2 \cdot 3\sqrt{3} + \sqrt{3}}{2\sqrt{3}} = \frac{6\sqrt{3} + \sqrt{3}}{2\sqrt{3}}$$

$$= \frac{7\sqrt{3}}{2\sqrt{3}} = \frac{7}{2}$$

Cevap: B

18.SORU: $\frac{\sqrt{192} - \sqrt{108}}{\sqrt{27}}$

$$= \frac{8\sqrt{3} - 6\sqrt{3}}{3\sqrt{3}} = \frac{2\sqrt{3}}{3\sqrt{3}} = \frac{2}{3}$$

Cevap: D

22.SORU: $\sqrt{\frac{1}{16}} \cdot \sqrt{0,64}$

$$= \frac{1}{4} \cdot \sqrt{\frac{64}{100}}$$

$$= \frac{1}{4} \cdot \frac{8}{10} = \frac{2}{10} = 0,2$$

Cevap: A

19.SORU: $2(\sqrt{2} + 1) - \sqrt{8}$

$$= 2\sqrt{2} + 2 - 2\sqrt{2}$$

$$= 2$$

Cevap: B

23.SORU: $\sqrt{\frac{1}{6} - \frac{2}{9} + \frac{1}{12}}$

$$= \sqrt{\frac{6-8+3}{36}}$$

$$= \sqrt{\frac{1}{36}} = \frac{1}{6}$$

Cevap: B

20.SORU: $\frac{\sqrt{20} + \sqrt{45}}{\sqrt{5}}$

$$= \frac{2\sqrt{5} + 3\sqrt{5}}{\sqrt{5}} = \frac{5\sqrt{5}}{\sqrt{5}} = 5$$

Cevap: A

24.SORU: $2^{\sqrt{x}} \cdot 4^{\sqrt{x}} = 4$

$$2^{\sqrt{x}} \cdot 2^{2\sqrt{x}} = 2^2$$

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

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

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

$$x = \frac{4}{9}$$

Cevap: E

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25.SORU: $x - \sqrt{x} = 5$

$$3x - \frac{3x+5\sqrt{x}}{\sqrt{x}}$$

$$= 3x - \frac{\sqrt{x}(3\sqrt{x}+5)}{\sqrt{x}} = 3x - (3\sqrt{x}+5)$$

$$= 3x - 3\sqrt{x} - 5 = 3(x - \sqrt{x}) - 5$$

$$= 3 \cdot 5 - 5 = 15 - 5 = 10$$

Cevap: B

29.SORU: $\frac{x + x\sqrt{x} + \sqrt{x} + 1}{x^2 - 1} = -\frac{5}{2}$

$$\frac{x(1+\sqrt{x}) + (\sqrt{x}+1)}{(x-1) \cdot (x+1)} = \frac{(\sqrt{x}+1) \cdot (x+1)}{(\sqrt{x}-1) \cdot (\sqrt{x}+1) \cdot (x+1)}$$

$$\frac{1}{\sqrt{x}-1} = -\frac{5}{2} \quad \sqrt{x} = \frac{3}{5}$$

$$-5\sqrt{x} + 5 = 2 \quad x = \frac{9}{25}$$

$$5\sqrt{x} = 3$$

Cevap: B

26.SORU: $\frac{\sqrt{15 \cdot 6^3}}{\sqrt{10^3}} = \sqrt{\frac{3 \cdot 5 \cdot 2^3 \cdot 3^3}{2^3 \cdot 5^3}}$

$$= \sqrt{\frac{3^4}{5^2}} = \frac{3^2}{5} = \frac{9}{5}$$

Cevap: A

30.SORU: $\sqrt[3]{2^x} = 9$

$$27^y = 16$$

$$\left. \begin{array}{l} 2^{\frac{x}{3}} = 3^2 \\ 2^4 = 3^{3y} \end{array} \right\} \frac{\frac{x}{3}}{4} = \frac{2}{3y}$$

$$\frac{x}{12} = \frac{2}{3y}$$

$$x \cdot y = 8$$

Cevap: E

27.SORU: $\frac{\sqrt{x+4}}{\sqrt{x-3}} = \frac{\sqrt{x+3}}{\sqrt{x-4}}$

$$\sqrt{x+4} \cdot \sqrt{x-4} = (\sqrt{x-3}) \cdot (\sqrt{x+3})$$

$$\sqrt{(x+4) \cdot (x-4)} = x-3$$

$$\sqrt{x^2-16} = x-3 \Rightarrow x^2-16 = x^2-6x+9$$

$$6x = 25$$

$$x = \frac{25}{6}$$

Cevap: D

31.SORU: $\sqrt[3]{\sqrt{28}-1} \cdot \sqrt[3]{\sqrt{28}+1}$

$$= \sqrt[3]{(\sqrt{28}-1) \cdot (\sqrt{28}+1)}$$

$$= \sqrt[3]{28-1} = \sqrt[3]{27} = 3$$

Cevap: B

28.SORU: $\sqrt{45} + \frac{4}{7+3\sqrt{5}}$

$$(7-3\sqrt{5})$$

$$= \sqrt{45} + \frac{4 \cdot (7-3\sqrt{5})}{49-45}$$

$$= 3\sqrt{5} + \frac{4 \cdot (7-3\sqrt{5})}{4}$$

$$= 3\sqrt{5} + 7 - 3\sqrt{5} = 7$$

Cevap: A

32.SORU: $\left(\frac{2}{\sqrt{3}-\sqrt{2}} + \frac{4}{\sqrt{5}+\sqrt{3}} \right) \cdot \frac{\sqrt{5}-\sqrt{2}}{3}$

$$\left(\frac{2}{\sqrt{3}+\sqrt{2}} + \frac{4}{\sqrt{5}-\sqrt{3}} \right) \cdot \frac{\sqrt{5}-\sqrt{2}}{3}$$

$$= \left(\frac{2(\sqrt{3}+\sqrt{2})}{1} + \frac{4 \cdot (\sqrt{5}-\sqrt{3})}{2} \right) \cdot \frac{\sqrt{5}-\sqrt{2}}{3}$$

$$= (2\sqrt{3} + 2\sqrt{2} + 2\sqrt{5} - 2\sqrt{3}) \cdot \frac{\sqrt{5}-\sqrt{2}}{3}$$

$$= 2(\sqrt{2}+\sqrt{5}) \cdot \frac{(\sqrt{5}-\sqrt{2})}{3}$$

$$= 2 \cdot \frac{(5-2)}{3} = 2 \cdot \frac{3}{3} = 2$$

Cevap: B

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33.SORU: $\sqrt{x} - \sqrt{y} = 2$
 $+\sqrt{x} + \sqrt{y} = 6$

$$\frac{2\sqrt{x} = 8}{2\sqrt{x} = 8}$$

$$\sqrt{x} = 4 \Rightarrow x = 16$$

$$\sqrt{x} - \sqrt{y} = 2$$

$$4 - \sqrt{y} = 2$$

$$\sqrt{y} = 2 \Rightarrow y = 4$$

$$x + y = 16 + 4 = 20$$

Cevap: D

34.SORU: $\frac{\sqrt{x^3 y}}{\sqrt{x}} + \frac{\sqrt{x^2 y^2}}{\sqrt{y}} = \sqrt{x}$

$$\frac{x\sqrt{x} \cdot \sqrt{y}}{\sqrt{x}} + \frac{x \cdot y}{\sqrt{y}} = \sqrt{x}$$

$$x\sqrt{y} + x\sqrt{y} = \sqrt{x}$$

$$2x\sqrt{y} = \sqrt{x}$$

$$\frac{x\sqrt{y}}{\sqrt{x}} = \frac{1}{2} \Rightarrow \sqrt{x \cdot y} = \frac{1}{2} \Rightarrow x \cdot y = \frac{1}{4}$$

Cevap: C