MATEMATİK DEFTERİ
KÖKLÜ SAYILAR - TEST 7

1.SORU: $\sqrt[3]{120+\sqrt{23+\sqrt{x}}} = 5$

$\left(\sqrt[3]{120+\sqrt{23+\sqrt{x}}}\right)^3 = 5^3$

$120+\sqrt{23+\sqrt{x}} = 125$

$\left(\sqrt{23+\sqrt{x}}\right)^2 = 5^2$

$23+\sqrt{x} = 25$

$\sqrt{x} = 2 \Rightarrow x = 4 \quad x^2 = 16$

Cevap: D

2.SORU: $x = \sqrt{10}$

$\sqrt{\frac{2}{5}} = \frac{\sqrt{2}}{\sqrt{5}} = \frac{\sqrt{10}}{5} = \frac{x}{5}$

$(\sqrt{5})$

Cevap: C

3.SORU: $a = \sqrt{2} \quad b = \sqrt{3} \quad c = \sqrt{5}$

$\sqrt{0,12} = \sqrt{\frac{12}{100}} = \frac{\sqrt{2^2 \cdot 3}}{\sqrt{2^2 \cdot 5^2}} = \frac{2 \cdot \sqrt{3}}{2 \cdot 5}$

$= \frac{\sqrt{3}}{5} = \frac{b}{c^2}$

Cevap: E

4.SORU: $(\sqrt{5}-2)^{10} \cdot (\sqrt{5}+2)^{11}$

$= (\sqrt{5}-2)^{10} \cdot (\sqrt{5}+2)^{10} \cdot (\sqrt{5}+2)$

$= \left((\sqrt{5}-2)\cdot(\sqrt{5}+2)\right)^{10} \cdot (\sqrt{5}+2)$

$= (5-4)^{10} \cdot (\sqrt{5}+2)$

$= 1^{10} \cdot (\sqrt{5}+2)$

$= \sqrt{5}+2$

Cevap: B

5.SORU: $x < 0$

$\sqrt{2x^2 - \sqrt[3]{x^6}} + \sqrt{x^2} = \sqrt{2x^2 - x^2} + \sqrt{x^2}$

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

$= 2\sqrt{x^2}$

$= 2 \cdot |x| = -2x$

Cevap: A

6.SORU: $\sqrt{x^2+4x+4} + \sqrt{9y^2-24y+16} = 0$

$\sqrt{(x+2)^2} + \sqrt{(3y-4)^2} = 0$

$x+2=0 \qquad 3y-4=0$

$x=-2 \qquad y=\frac{4}{3}$

$3y - 4x = 3 \cdot \frac{4}{3} - 4 \cdot (-2) = 4+8 = 12$

Cevap: A

7.SORU: $\frac{(3\sqrt{2}-2\sqrt{3})^2 - (3\sqrt{2}+2\sqrt{3})^2}{4\sqrt{6}}$

$= \frac{(3\sqrt{2}-2\sqrt{3}+3\sqrt{2}+2\sqrt{3}) \cdot (3\sqrt{2}-2\sqrt{3}-3\sqrt{2}-2\sqrt{3})}{4\sqrt{6}}$

$= \frac{6\sqrt{2} \cdot (-4\sqrt{3})}{4\sqrt{6}} = -\frac{24\sqrt{6}}{4\sqrt{6}} = -6$

Cevap: B

8.SORU: $\sqrt{11-2\sqrt{18}} \cdot (3+\sqrt{2})$

$9 \quad 2$

$= (\sqrt{9}-\sqrt{2}) \cdot (3+\sqrt{2})$

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

$= 9-2 = 7$

Cevap: B

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9.SORU: $\sqrt[3]{\sqrt{2}} = \sqrt[3]{4}\cdot\sqrt[5]{2^x}$

$2^{\frac{1}{6}} = 2^{\frac{2}{3}}\cdot 2^{\frac{x}{5}}$

$2^{\frac{1}{6}} = 2^{\frac{2}{3}+\frac{x}{5}} \Rightarrow \frac{1}{6} = \frac{2}{3}+\frac{x}{5}$

(5) (10) (6)

$5 = 20+6x$

$x = \frac{-15}{6} = \frac{-5}{2}$

Cevap: A

10.SORU: $x = 2^{\frac{72}{5}}$

$\sqrt[3]{\sqrt{x^2\cdot\sqrt[4]{\sqrt[3]{x}}}} = \sqrt[3]{\sqrt{x^2\cdot x^{\frac{1}{12}}}} = \sqrt[3]{\sqrt{x^{\frac{25}{12}}}}$

$= \left(x^{\frac{25}{12}}\right)^{\frac{1}{6}} = x^{\frac{25}{72}} = \left(2^{\frac{72}{5}}\right)^{\frac{25}{72}} = 2^5 = 32$

Cevap: E

11.SORU: $\sqrt[23]{\left(\sqrt{3}\cdot\sqrt[3]{9}\cdot\sqrt[4]{27}\right)^{12}}$

$= \sqrt[23]{\left(3^{\frac{1}{2}}\cdot 3^{\frac{2}{3}}\cdot 3^{\frac{3}{4}}\right)^{12}} = \sqrt[23]{\left(3^{\frac{1}{2}+\frac{2}{3}+\frac{3}{4}}\right)^{12}}$

(6) (4) (3)

$= \sqrt[23]{\left(3^{\frac{6+8+9}{12}}\right)^{12}} = \left(3^{\frac{23}{12}}\right)^{\frac{12}{23}} = 3^1$

Cevap: A

12.SORU: $4\cdot\sqrt[3]{2^{6x+3}} = \sqrt{4^{3x+1}}$

$\sqrt[3]{4^3\cdot 2^{6x+3}} = \sqrt{4^{3x+1}}$

$\left(\sqrt[3]{2^6\cdot 2^{6x+3}}\right)^6 = \left(\sqrt{4^{3x+1}}\right)^6$

$\left(2^{6x+9}\right)^2 = \left((2^2)^{3x+1}\right)^3$

$2^{12x+18} = 2^{18x+6}$

$12x+18 = 18x+6$

$6x = 12 \Rightarrow x = 2$

Cevap: B

13.SORU: $\sqrt{30+\sqrt{30+\sqrt{30+\ldots}}} - \sqrt{12-\sqrt{12-\sqrt{12-\ldots}}}$

(6) 5 — 4 (3)

$= 6-3$

$= 3$

Cevap: A

14.SORU: $\sqrt[4]{x+\underbrace{\sqrt[4]{x+\underbrace{\sqrt[4]{x+\ldots}}_{3}}}_{3}} = 3$

$\sqrt[4]{x+3} = 3$

$\left(\sqrt[4]{x+3}\right)^4 = 3^4$

$x+3 = 81$

$x = 78$

Cevap: D

15.SORU: $\sqrt[7]{64\sqrt[7]{64\ldots}} + \sqrt{20+\sqrt{20+\ldots}} = \sqrt{x-\sqrt{x-\ldots}}$

$\sqrt[7-1]{64}$ — (5) 4

$\sqrt[6]{2^6} + 5 = 2+5 = 7$

$\sqrt{x-\underbrace{\sqrt{x-\ldots}}_{7}} = 7 \Rightarrow \sqrt{x-7} = 7$

$x-7 = 49$

$x = 56$

Cevap: B

16.SORU: $\sqrt{5+\underbrace{\sqrt[3]{16\sqrt[3]{16\ldots}}}_{3-1\sqrt{16}}} + \underbrace{\sqrt[3]{x\cdot\sqrt[3]{x\cdot\ldots}}}_{3+1\sqrt{x}} = 6$

$\sqrt{5+\sqrt{16}} + \sqrt[4]{x} = 6$

$\sqrt{5+4} + \sqrt[4]{x} = 6$

$\sqrt{9} + \sqrt[4]{x} = 6$

$\sqrt[4]{x} = 6-3$

$\sqrt[4]{x} = 3 \Rightarrow \left(\sqrt[4]{x}\right)^4 = 3^4$

$x = 81$

Cevap: A