1.

$$\underset{(\sqrt{2}+1)}{\frac{1}{\sqrt{2}-1}} - \underset{(\sqrt{2}-1)}{\frac{1}{\sqrt{2}+1}}$$

$$= \frac{\sqrt{2}+1}{1} - \frac{\left(\sqrt{2}-1\right)}{1}$$

$$= \sqrt{2}+1-\sqrt{2}+1$$

$$= 2 \text{ dir.}$$

CEVAP: C

3.

$$\sqrt{\left(2-\sqrt{5}\right)^2} - \sqrt[3]{\left(\sqrt{5}-12\right)^3}$$

$$= \left|2-\sqrt{5}\right| - \left(\sqrt{5}-12\right)$$

$$= -2 + \sqrt{5} - \sqrt{5} + 12$$

$$= -2 + 12$$

$$= 10 \text{ bulunur.}$$

CEVAP: D

4. $5 - 2\sqrt{6}$ ifadesinin çarpmaya göre tersi

$$\frac{1}{5-2\sqrt{6}}$$

toplamaya göre tersi $-5 + 2\sqrt{6}$ dır. Buna göre,

$$\underset{(5+2\sqrt{6})}{\frac{1}{5-2\sqrt{6}}} + \left(-5 + 2\sqrt{6}\right) = \frac{5+2\sqrt{6}}{25-24} + \left(-5 + 2\sqrt{6}\right)$$

$$= \cancel{5} + 2\sqrt{6} - \cancel{5} + 2\sqrt{6}$$

$$= 4\sqrt{6}$$

CEVAP: C

2.

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

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

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

$$a - b = a \cdot b$$

$$a = ab + b$$

$$a = b(a+1)$$

$$b = \frac{a}{a+1} \text{ dir.}$$

CEVAP: A

5.

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

$$x^x + x^x + x^x = 3^4$$

$$3 \cdot x^x = 3^4$$

$$x^x = 3^3$$

CEVAP: B

6. $x = 3 - \sqrt{5}$

$y = 3 + \sqrt{5}$

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

$$= \sqrt{\frac{6}{9-5}}$$

$$= \sqrt{\frac{6}{4}}$$

$$= \frac{\sqrt{6}}{\sqrt{4}}$$

$$= \frac{\sqrt{6}}{2} \text{ dir.}$$

CEVAP: C

7.

$$\frac{\sqrt[6]{\sqrt{5}-1}\cdot\sqrt[3]{\sqrt{5}-1}\cdot\overbrace{\sqrt{\sqrt{5}+1\cdot\sqrt{\sqrt{5}-1}}}^{\sqrt{\left(\sqrt{5}\right)^2 - 1^2}}}{\sqrt{\sqrt{5}-1}}$$

$$\underbrace{\frac{\sqrt[6]{\sqrt{5}-1}\cdot\sqrt[3]{\sqrt{5}-1}}{\sqrt{\sqrt{5}-1}}}_{1}\cdot\sqrt{4}$$

$$1\cdot\sqrt{4} = 2 \text{ dir.}$$

CEVAP: B

8. 2003 = a dersek

$$\sqrt{a\cdot(a+4)+4}$$

$$\sqrt{a^2+4a+4} = \sqrt{(a+2)^2}$$

$$= \left|a+2\right|$$

$$= \left|2003+2\right|$$

$$= 2005 \text{ dir.}$$

CEVAP: D

9. $\sqrt[3]{\frac{1}{4}\cdot\sqrt[5]{8}} = 2^{x-1}$

$$\sqrt[3]{2^{-2}\cdot 2^{\frac{3}{5}}} = 2^{x-1} \Rightarrow \sqrt[3]{2^{-2+\frac{3}{5}}} = 2^{x-1}$$

$$\sqrt[3]{2^{-\frac{7}{5}}} = 2^{x-1} \Rightarrow 2^{-\frac{7}{15}} = 2^{x-1}$$

$$\Rightarrow \frac{-7}{15} = x-1$$

$$\Rightarrow x = 1 - \frac{7}{15}$$

$$x = \frac{8}{15}$$

CEVAP: E

10. $y = \sqrt{3} - 2$ ise

$(y+1)\cdot(y)\cdot(y+3)\cdot(y+4)$

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

$$\left(\sqrt{3}-1\right)\cdot\left(\sqrt{3}-2\right)\cdot\left(\sqrt{3}+1\right)\cdot\left(\sqrt{3}+2\right)$$

$$\left[\left(\sqrt{3}\right)^2-1^2\right]\cdot\left[\left(\sqrt{3}\right)^2-2^2\right]$$

$$= (3-1)\cdot(3-4)$$

$$= 2\cdot(-1)$$

$$= -2 \text{ bulunur.}$$

CEVAP: E

11. $\sqrt{8} - \dfrac{2}{\sqrt{2} - \dfrac{1}{\sqrt{2}}} = \sqrt{8} - \dfrac{2}{\dfrac{2-1}{\sqrt{2}}}$

$= \sqrt{8} - \dfrac{2}{\dfrac{1}{\sqrt{2}}}$

$= \sqrt{8} - 2\sqrt{2}$

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

$= 0$ bulunur.

CEVAP: A

13. $\sqrt{8^{x-1}} = \dfrac{1}{64}$

$8^{\frac{x-1}{2}} = \dfrac{1}{2^6}$

$2^{\frac{3x-3}{2}} = 2^{-6}$

$\dfrac{3x-3}{2} = -6$

$3x - 3 = -12$

$3x = -9$

$x = -3$ bulunur.

CEVAP: A

14. $\sqrt[5]{27^{x-2}} = \sqrt[3]{9^{x+1}}$

$\Rightarrow 27^{\frac{x-2}{5}} = 9^{\frac{x+1}{3}}$

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

$\Rightarrow \dfrac{3x-6}{5} = \dfrac{2x+2}{3}$

$\Rightarrow 9x - 18 = 10x + 10$

$x = -28$ bulunur.

CEVAP: A

12. $x = \sqrt{5} - \sqrt{2}$

$x^{-1} - \dfrac{\sqrt{2}}{3} = \dfrac{1}{x} - \dfrac{\sqrt{2}}{3}$

$= \dfrac{1}{\underset{(\sqrt{5}+\sqrt{2})}{\sqrt{5} - \sqrt{2}}} - \dfrac{\sqrt{2}}{3}$

$= \dfrac{\sqrt{5} + \sqrt{2}}{\left(\sqrt{5}\right)^2 - \left(\sqrt{2}\right)^2} - \dfrac{\sqrt{2}}{3}$

$= \dfrac{\sqrt{5} + \sqrt{2}}{3} - \dfrac{\sqrt{2}}{3}$

$= \dfrac{\sqrt{5} + \cancel{\sqrt{2}} - \cancel{\sqrt{2}}}{3}$

$= \dfrac{\sqrt{5}}{3}$ bulunur.

CEVAP: B

15. $\sqrt[3]{2^{x-2}} = \sqrt[5]{8^{x-2}}$ ise,

$2^{\frac{x-2}{3}} = 8^{\frac{x-2}{5}}$

$2^{\frac{x-2}{3}} = \left(2^3\right)^{\frac{x-2}{5}} \Rightarrow 2^{\frac{x-2}{3}} = 2^{\frac{3x-6}{5}}$

olduğundan,

$\dfrac{x-2}{3} = \dfrac{3x-6}{5}$

$\Rightarrow 5x - 10 = 9x - 18$

$8 = 4x$

$x = 2$ dir.

CEVAP: B

16. $(2^x)^6 = 8\sqrt{2} \Rightarrow 2^{6x} = 2^3 \cdot 2^{\frac{1}{2}}$

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

$\Rightarrow 2^{6x} = 2^{\frac{7}{2}}$

$\Rightarrow 6x = \frac{7}{2}$

$x = \frac{7}{12}$ dir.

CEVAP: A

17. $\sqrt[6]{3^{6a-18}} = 81 \Rightarrow 3^{\frac{6a-18}{6}} = 81$

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

$\Rightarrow a - 3 = 4$

$\Rightarrow a = 7$ dir.

CEVAP: A

18. $\dfrac{x}{4} = \dfrac{y}{9} = k$ ise $x = 4k$, $y = 9k$ dır.

$\sqrt{9x} + \sqrt{4y} = \sqrt{9 \cdot 4k} + \sqrt{4 \cdot 9k}$

$= 6\sqrt{k} + 6\sqrt{k}$

$= 12\sqrt{k}$

CEVAP: D

19. $\sqrt{128} - \sqrt{8} = \sqrt{64 \cdot 2} - \sqrt{4 \cdot 2}$

$= 8\sqrt{2} - 2\sqrt{2}$

$= 6\sqrt{2}$ olduğundan

$6\sqrt{2} = 6 \cdot 1{,}4 = 8{,}4$ dür.

CEVAP: E

20. $\sqrt{3}\left(\sqrt{6} + \sqrt{2}\right) + \sqrt{2} - \sqrt{6}$

$= \sqrt{18} + \sqrt{6} + \sqrt{2} - \sqrt{6}$

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

$= 4\sqrt{2}$ dir.

CEVAP: E