1. $(-a^{-1})^{-2} \cdot (-a^{-3})^{-3}$

$= a^2 \cdot -a^9$

$= -a^{2+9}$

$= -a^{11}$ dir.

<div align="right">

CEVAP: A

</div>

4. $a = \dfrac{4^{3x^2-2}}{64^{x^2-1}}$

$a = \dfrac{2^{6x^2-4}}{2^{6x^2-6}}$

$a = 2^{6x^2-4-6x^2+6}$

$a = 2^2$

$a = 4$ dür.

<div align="right">

CEVAP: E

</div>

2.

$$\frac{(-a^{-1})^{-3} \cdot (-a^{-2})^3}{\left(-\dfrac{1}{a}\right)^{-3}} = \frac{-a^3 \cdot -a^{-6}}{(-a^{-1})^{-3}}$$

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

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

$$= -a^{-6}$$

<div align="right">

CEVAP: A

</div>

3.

$$\frac{5^{4a} - 25^{2a-1}}{\sqrt{5^{8a-4}}} = \frac{5^{4a} - 5^{4a-2}}{5^{\frac{8a-4}{2}}}$$

$$= \frac{5^{4a} \cdot (1 - 5^{-2})}{5^{4a} \cdot 5^{-2}}$$

$$= \frac{\left(1 - \dfrac{1}{25}\right)}{\dfrac{1}{25}}$$

$$= \frac{\dfrac{24}{25}}{\dfrac{1}{25}}$$

$$= \frac{24}{25} \cdot \frac{25}{1}$$

$$= 24 \text{ olur.}$$

<div align="right">

CEVAP: D

</div>

5. $\dfrac{2^{n-3} + 2^{n-1}}{2^n + 2^{n-2}} = \dfrac{2^n \cdot (2^{-3} + 2^{-1})}{2^n \cdot (1 + 2^{-2})}$

$$= \frac{\dfrac{1}{8} + \dfrac{1}{2}}{\dfrac{1}{1} + \dfrac{1}{4}}$$
$$\quad {}^{(1)}\;\;{}^{(4)} \qquad {}^{(4)}\;\;{}^{(1)}$$

$$= \frac{\dfrac{5}{8}}{\dfrac{5}{4}}$$

$$= \frac{5}{8} \cdot \frac{4}{5}$$

$$= \frac{1}{2} \text{ dir.}$$

<div align="right">

CEVAP: A

</div>

6. $(32)^{4x} = \left(\dfrac{1}{8}\right)^{-5}$

$(2^5)^{4x} = (2^{-3})^{-5}$

$2^{20x} = 2^{15}$

tabanlar eşit olduğundan üsler eşittir.

$20x = 15$

$x = \dfrac{15}{20}$

$x = \dfrac{3}{4}$ dür.

CEVAP: D

7. $(5^x)^3 = 25\sqrt{5}$

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

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

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

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

$x = \dfrac{5}{6}$

CEVAP: C

8. $2^x \cdot 4^{x-1} = 16^{x-2}$

$2^x \cdot (2^2)^{x-1} = (2^4)^{x-2}$

$2^x \cdot 2^{2x-2} = 2^{4x-8}$

$2^{3x-2} = 2^{4x-8}$

$3x - 2 = 4x - 8$

$x = 6$ dır.

CEVAP: B

9. $\left(\dfrac{0,012}{0,003}\right)^{x+1} = 8^{x-2}$

$\left(\dfrac{12}{3}\right)^{x+1} = (2^3)^{x-2}$

$(4)^{x+1} = 2^{3x-6}$

$2^{2x+2} = 2^{3x-6}$

$2x + 2 = 3x - 6$

$x = 8$ dir.

CEVAP: E

10. $\dfrac{2^a + 5 \cdot 2^{a-1}}{7 \cdot 6^{a-1}} = 9$

$\dfrac{2^a \cdot (1 + 5 \cdot 2^{-1})}{7 \cdot 3^{a-1} \cdot 2^{a-1}} = 9$

$\dfrac{2^a \cdot \left(1 + \dfrac{5}{2}\right)}{7 \cdot 3^{a-1} \cdot 2^a \cdot 2^{-1}} = 9$

$\dfrac{\dfrac{7}{2}}{\dfrac{7}{2} \cdot 3^{a-1}} = 9$

$\dfrac{1}{3^{a-1}} = 3^2$

$3^{-a+1} = 3^2$ ise

$-a + 1 = 2$

$a = -1$ dir.

CEVAP: E

11. $4^x + 4^x + 4^x = 192$

$3 \cdot 4^x = 192$

$4^x = 64$

$4^x = 4^3$ ise $x = 3$ dir.

Buradan

$9^3 \cdot 3^y = 27$

$3^y = \dfrac{27}{9^3}$

$3^y = \dfrac{3^3}{3^6}$

$3^y = 3^{-3}$

$y = -3$ bulunur.

CEVAP: A

12. $2^x \cdot 5^y = 4$

$5^x \cdot 2^y = 2500$ denklemleri taraf tarafa çarpılırsa,

$2^x \cdot 5^y \cdot 5^x \cdot 2^y = 4 \cdot 2500$

$2^{x+y} \cdot 5^{x+y} = 2^2 \cdot 5^2 \cdot 10^2$

$2^{x+y} \cdot 5^{x+y} = 2^4 \cdot 5^4$

$(10)^{x+y} = (10)^4$

olduğundan; $x + y = 4$ dür.

CEVAP: E

13. $\dfrac{3}{2^{1-x}} - \dfrac{1}{8} = 2^{x-1}$

$3 \cdot 2^{x-1} - 2^{-3} = 2^{x-1}$

$3 \cdot 2^{x-1} - 2^{x-1} = 2^{-3}$

$2^{x-1} \cdot (3 - 1) = 2^{-3}$

$2^{x-1} \cdot 2 = 2^{-3}$

$2^x = 2^{-3}$

$x = -3$ bulunur.

CEVAP: B

14. $\dfrac{3^{x-2}}{27^{2x+1}} = 9^{x-1}$

$3^{x-2} = 9^{x-1} \cdot 27^{2x+1}$

$3^{x-2} = 3^{2x-2} \cdot 3^{6x+3}$

$3^{x-2} = 3^{8x+1}$

$x - 2 = 8x + 1$

$-7x = 3$

$x = -\dfrac{3}{7}$ dir.

CEVAP: A

15. $2^{x-1} + 2^x = \dfrac{48}{2^{y+1}}$

$2^x \cdot (2^{-1} + 1) = \dfrac{\overset{24}{\cancel{48}}}{2^y \cdot \cancel{2}}$

$2^x \cdot \dfrac{\overset{1}{\cancel{3}}}{2} = \dfrac{\overset{8}{\cancel{24}}}{2^y}$

$2^x \cdot 2^y = 16$

$2^x \cdot 2^y = 2^4$

$x + y = 4$

$y = 4 - x$ dir.

CEVAP: B

16.
$$2 \cdot 3^{x-2} + 3^{x+1} = y \cdot 3^{x-1}$$
$$3^x \cdot (2 \cdot 3^{-2} + 3^{+1}) = y \cdot 3^x \cdot 3^{-1}$$
$$\left(\frac{2}{9} + 3\right) = y \cdot \frac{1}{3}$$
$$\frac{29}{9} = y \cdot \frac{1}{3}$$
$$y = \frac{29}{3} \text{ dür.}$$

CEVAP: C

17.
$$\frac{15^n + 5^n}{3^n + 1} = 125$$
$$\frac{5^n \cdot (3^n + 1)}{(3^n + 1)} = 125$$
$$5^n = 125$$
$$5^n = 5^3$$
$$n = 3 \text{ dür.}$$

CEVAP: C

18.
$$5^{x+1} + 5^x - 5^{x-1} = 145$$
$$5^x \cdot (5 + 1 - 5^{-1}) = 145$$
$$5^x \cdot \left(6 - \frac{1}{5}\right) = 145$$
$$5^x \cdot \left(\frac{29}{5}\right) = \overset{5}{\cancel{145}}$$
$$5^x = 5^2$$
$$x = 2 \text{ dir.}$$

CEVAP: E

19.
$$2^x + 2^{x+1} + 2^{x+2} = 4^x$$
$$2^x \cdot (1 + 2 + 2^2) = 2^{2x}$$
$$2^x \cdot 7 = 2^{2x}$$
$$2^x = 7 \text{ dir.}$$

Buradan; $2^{x-1} = \dfrac{7}{2}$

CEVAP: D

20.
$$4^{x+1} + 2^{2x} = 40$$
$$2^{2x+2} + 2^{2x} = 40$$
$$2^{2x} \cdot (2^2 + 1) = 40$$
$$2^{2x} \cdot 5 = 40$$
$$2^{2x} = 8$$
$$2^{2x} = 2^3$$
$$2x = 3$$
$$x = \frac{3}{2} \text{ dir.}$$

CEVAP: B