1. $256^5 + 16^{10} = x \cdot 2^{40}$

$(2^8)^5 + (2^4)^{10} = x \cdot 2^{40}$

$2^{40} + 2^{40} = x \cdot 2^{40}$

$2^{40}(1 + 1) = x \cdot 2^{40}$

$x = 2$ olur.

Cevap: C

2. • $a^2 = a^b \cdot b \quad \Rightarrow \quad b = a^{2-b}$

• $\dfrac{1}{b} = a^4 \cdot a^{-b} \quad \Rightarrow \quad b = a^{b-4}$

O halde $\quad a^{2-b} = a^{b-4}$

$\Rightarrow \quad 2 - b = b - 4$

$2b = 6$

$b = 3$

$b = 3 \quad$ ise $\quad 3 = a^{2-3}$

$3 = a^{-1}$

$a = \dfrac{1}{3}$

O halde $a \cdot b = \dfrac{1}{3} \cdot 3 = 1$ olur.

Cevap: A

3. $4^a = 3 \quad$ ise $\qquad 4^{a \cdot b} = 3^b$

$3^b = 5 \quad$ ise $\qquad \underline{x \quad 3^{b \cdot a} = 5^a}$

$\qquad\qquad\qquad 12^{ab} = 3^b \cdot 5^a$

O halde $\dfrac{12^{ab}}{5^a} = \dfrac{3^b \cdot 5^a}{5^a} = 3^b = 5$ çıkar.

Cevap: B

4. $2^a = 5^1 \quad$ ise $\quad 2^{\frac{a}{a+1}} = 5^{\frac{1}{a+1}}$ olur.

O halde $10^{\frac{a}{a+1}} = 2^{\frac{a}{a+1}} \cdot 5^{\frac{a}{a+1}}$

$\downarrow$

$= 5^{\frac{1}{a+1}} 5^{\frac{a}{a+1}}$

$= 5^{\frac{a+1}{a+1}}$

$= 5^1$ çıkar.

Cevap: A

5.

A
c
B · a C
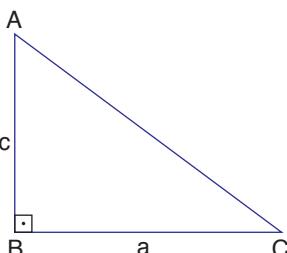
$\Rightarrow A(\widehat{ABC}) = \dfrac{c \cdot a}{2}$

bizden istenen.

• $2^c = 9 \quad$ ise $\quad (2^c)^{\frac{1}{2}} = (9)^{\frac{1}{2}} \quad \Rightarrow \quad 2^{\frac{c}{2}} = 3$ olur.

• $3^a = 8 \quad \rightarrow \quad \left(2^{\frac{c}{2}}\right)^a = 8$

$2^{\frac{a \cdot c}{2}} = 2^3$

$\Rightarrow \quad \dfrac{a \cdot c}{2} = 3$ çıkar.

Cevap: D

6. $4^{x+3} - 3^y = 4^{x+2} + 3^{y-1}$

$4^{x+3} - 4^{x+2} = 3^{y-1} + 3^y$

$4^x(64 - 16) = 3^y\left(\dfrac{1}{3} + 1\right)$

$4^x \cdot \overset{12}{\cancel{48}} = 3^y \cdot \dfrac{\cancel{4}}{3}$

$4^x \cdot 4 \cdot 3 = 3^{y-1}$

$4^{x+1} = 3^{y-2} \quad \Rightarrow \quad x + 1 = 0 \quad$ ve $\quad y - 2 = 0$

$x = -1 \qquad\qquad y = 2$

$\Rightarrow \quad x \cdot y = -2$ olur.

Cevap: D

7. $1023^2 = 1046529 \quad$ ise

$2046^2 = 1023^2 \cdot 2^2 = 4 \cdot 1046529$

$= 4186116$

$\Rightarrow$ rakamları toplamı $4 + 1 + 8 + 6 + 1 + 1 + 6 = 27$ olur.

Cevap: D

Tasarı Eğitim Yayınları

8. • $12^x = 4 \Rightarrow 2^{2x}.3^x = 2^2 \Rightarrow 3^x = 2^{2-2x}$

$\Rightarrow \begin{array}{l} 2^y = 3^1 \\ 2^{2-2x} = 3^x \end{array} \Rightarrow$

$\dfrac{y}{2-2x} = \dfrac{1}{x}$

$xy = 2 - 2x$

$2x + xy = 2$

$x(y + 2) = 2$

$x = \dfrac{2}{y+2}$

Cevap: D

9. • $25^x - 9^y = m$

$(5^x)^2 - (3^y)^2 = m$

$(5^x - 3^y)(5^x + 3^y) = m$

$n.(5^x + 3^y) = m$

$5^x + 3^y = \dfrac{m}{n}$

• $5^x - 3^y = n$

$+ \;\; 5^x + 3^y = \dfrac{m}{n}$

$\rule{4cm}{0.4pt}$

$2.5^x = n + \dfrac{m}{n}$

$5^x = \dfrac{n^2 + m}{2n}$

Cevap: B

10. $3^4 + 3^5 + 3^6 + \ldots + 3^{10}$

$= 3^4\underbrace{(1 + 3 + 3^2 + \ldots + 3^6)}_{A}$

$= 3^4.A$

$= 81.A$

Cevap: D

11. • $3^x = a$

$5^{-x} = b \Rightarrow 5^x = \dfrac{1}{b}$

$7^x = c^{-1} = \dfrac{1}{c}$

• $(105)^x = 3^x.5^x.7^x$

$= a.\dfrac{1}{b} \cdot \dfrac{1}{c}$

$= \dfrac{a}{b.c}$

Cevap: D

12. • $\underbrace{3.3.3. \ldots .3}_{x \text{ tane}} = K \Rightarrow K = 3^x$

• $\underbrace{3 + 3 + \ldots + 3}_{x \text{ tane}} = L \Rightarrow 3^x.3 = L = 3^{x+1}$

$\Rightarrow \;\; 3^x = a.3^{x+1}$

$3^{x-x-1} = a$

$\dfrac{1}{3} = a$

Cevap: C

13. $16^{a-12} = 25^{24}$

$16^a.\dfrac{1}{16^{12}} = 25^{24}$

$2^{4a} = 25^{24}.16^{12}$

$2^{4a} = 5^{48}.2^{48}$

$2^{4a} = 10^{48}$

$2^a = 10^{12} \;\;\rightarrow\;\; 2^a = 100\ldots0 \underbrace{}_{12 \text{ sıfır}}$

O halde 2^a sayısı 13 basamaklıdır.

Cevap: E

14. $a^a + a^a + a^a + a^a = 2^{26}$

$4.a^a = 2^2.2^{24}$

$4.a^a = 4.(2^3)^8$

$a^a = 8^8$

$\Rightarrow \;\; a = 8$

Cevap: E