1. $\dfrac{b^2-2b-3}{\left(\frac{3}{b}-1\right)\left(\frac{1}{b}+1\right)} = \dfrac{(b-3)(b+1)}{\frac{3-b}{b}.\frac{1+b}{b}}$

$= \dfrac{(b-3)(b+1).b^2}{-(b-3).(b+1)} = -b^2$

Cevap: B

2. • $x = 9 + \dfrac{1}{y} \quad \Rightarrow \quad x - \dfrac{1}{y} = 9$

• $x^2 = 144 + \dfrac{1}{y^2} \quad \Rightarrow \quad x^2 - \dfrac{1}{y^2} = 144$

$\left(x-\dfrac{1}{y}\right)\left(x+\dfrac{1}{y}\right) = 144$

$9.\left(x+\dfrac{1}{y}\right) = 144$

$x + \dfrac{1}{y} = 16$ olur.

Cevap: E

3. $\dfrac{x^2+1}{x^4+x^2}.\dfrac{x^4-x^3}{x^2-x} = \dfrac{x^2+1}{x^2(x^2+1)}.\dfrac{x^3(x-1)}{x(x-1)} = \dfrac{x^3}{x^3} = 1$

Cevap: B

4. x = 455 kabul edersek

• $A = 455.456 = x.(x+1) = x^2 + x$

• $456.457 = (x+1)(x+2) = x^2+3x+2 = x^2 + x + 2x + 2$

$= A + 2(x + 1)$

$= A + 2.456$

$= A + 912$ olur.

Cevap: D

5. • Küpün hacmi = x^3

Çıkarılan küçük küplerin hacmi = 1^3

• 8 tane küçük küp çıkarılacağından kalan hacim

$= x^3 - 8 = (x - 2)(x^2 + 2x + 4)$ ile ifade edilebilir.

Cevap: A

6. • $a.c + b.c = 1$

$c(a + b) = 1$

$a + b = \dfrac{1}{c}$

• $a + b + c = 3 \Rightarrow \dfrac{1}{c} + c = 3$ her iki tarafın karesi alınırsa

$\left(\dfrac{1}{c}+c\right)^2 = 3^2$

$\dfrac{1}{c^2} + 2.\dfrac{1}{c}.c + c^2 = 9$

$c^2 + \dfrac{1}{c^2} + 2 = 9$

$c^2 + \dfrac{1}{c^2} = 7$ olur.

Cevap: B

7. • $\dfrac{x}{y} - \dfrac{y}{x} = 4 \Rightarrow \left(\dfrac{x}{y} - \dfrac{y}{x}\right)^2 = 16$

$\dfrac{x^2}{y^2} - 2\dfrac{x}{y}.\dfrac{y}{x} + \dfrac{y^2}{x^2} = 16$

$\dfrac{x^2}{y^2} + \dfrac{y^2}{x^2} = 18$

• $\dfrac{x^2}{y^2} + \dfrac{y^2}{x^2} = 18 \Rightarrow \left(\dfrac{x^2}{y^2} + \dfrac{y^2}{x^2}\right)^2 = 324$

$\dfrac{x^4}{y^4} + 2.\dfrac{x^2}{y^2}.\dfrac{y^2}{x^2} + \dfrac{y^4}{x^4} = 324$

$\dfrac{x^4}{y^4} + \dfrac{y^4}{x^4} = 322$

$\Rightarrow \dfrac{x^8+y^8}{x^4.y^4} = \dfrac{x^8}{x^4y^4} + \dfrac{y^8}{x^4y^4} = \dfrac{x^4}{y^4} + \dfrac{y^4}{x^4} = 322$ olur.

Cevap: E

8. $x + \frac{4}{x+3} = 6$ → İki tarafa 3 ekleyelim

$x + 3 + \frac{4}{x+3} = 9$ → her iki tarafa karesi alınırsa

$\left(x+3+\frac{4}{x+3}\right)^2 = 9^2$

$(x+3)^2 + 2.\cancel{(x+3)}.\frac{4}{\cancel{x+3}} + \frac{16}{(x+3)^2} = 81$

$(x+3)^2 + \frac{16}{(x+3)^2} = 81 - 8$

$(x+3)^2 + \frac{16}{(x+3)^2} = 73$ olur.

Cevap: C

9. • $\frac{a+b+7}{7} = \frac{m+n}{n} \Rightarrow \frac{a+b}{7} + \frac{7}{7} = \frac{m}{n} + \frac{n}{n}$

$\frac{a+b}{7} + 1 = \frac{m}{n} + 1$

$\frac{a+b}{7} = \frac{m}{n}$

• $\frac{a-b-7}{7} = \frac{n-m}{m} \Rightarrow \frac{a-b}{7} - \frac{7}{7} = \frac{n}{m} - \frac{m}{m}$

$\frac{a-b}{7} - 1 = \frac{n}{m} - 1$

$\frac{a-b}{7} = \frac{n}{m}$

$\Rightarrow \quad \frac{a+b}{7} = \frac{m}{n}$

x $\quad \frac{a-b}{7} = \frac{n}{m}$

$\frac{a^2-b^2}{49} = 1 \quad \Rightarrow \quad a^2 - b^2 = 49$

Cevap: E

10. • $x^2 + x + 1 = \frac{26}{y}$ $\quad (y = x - 1)$

$x^2 + x + 1 = \frac{26}{x-1}$

$(x-1)(x^2 + x + 1) = 26$

$x^3 - 1 = 26$

$x^3 = 27$

$x = 3$

O halde $y = x - 1 = 3 - 1 = 2$ olur.

Cevap: B

11. a.a $\quad$ −10b.−b

$\frac{a^2 - 11b + 10b^2}{\left(\frac{a}{b} - 1\right)\left(\frac{a}{5} - 2b\right)} = \frac{\cancel{(a-10b)}(a-b)}{\frac{a-b}{b}.\frac{\cancel{a-10b}}{5}}$

$= \frac{1}{\frac{1}{5b}} = 5b$

Cevap: B

12. $\frac{1-\sqrt{a}-a+a\sqrt{a}}{a-2\sqrt{a}+1} = \frac{1-\sqrt{a}-a(1-\sqrt{a})}{(\sqrt{a}-1)^2}$

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

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

Cevap: C

13. $\frac{6n}{n^2+n-2} = \frac{a}{\underset{(n+2)}{n-1}} + \frac{b}{\underset{(n-1)}{n+2}}$

$$\frac{6n}{\cancel{n^2+n-2}} = \frac{an+2a+bn-b}{\cancel{n^2+n-2}}$$

$$6n = (a+b)n + 2a - b$$

$$\Rightarrow \quad a+b=6 \quad \Rightarrow \quad 2+b=6$$
$$+ \quad 2a-b=0 \qquad\qquad b=4$$
$$3a=6$$
$$a=2$$

$\Rightarrow$ a.b = 2.4 = 8 olur.

Cevap: A

14. $\frac{x^2+ax-6}{x^2+3x+2} = \frac{x^2+ax-6}{(x+2)(x+1)}$

ifadesi sadeleşebilir bir kesir ise

- $x^2 + ax - 6 = (x+2)(x+m) \Rightarrow a = -3+2 = -1$
  $\wedge \quad \downarrow$
  $2.-3$
- $x^2 + ax - 6 = (x+1).(x+n) \Rightarrow a = -6+1 = -5$
  $\wedge \quad \downarrow$
  $1.-6$

O halde a'nın değerleri toplamı

$(-1) + (-5) = -6$ olur.

Cevap: E

15. $\frac{x^2-3x-10}{x^2+8x+12} = \frac{x+m}{x+n}$

$$\frac{(x-5)(\cancel{x+2})}{(x+6)(\cancel{x+2})} = \frac{x+m}{x+n}$$

$\Rightarrow m = -5$ ve $n = 6$

I. $m.n < 0 \Rightarrow -5.6 < 0$ doğru

II. $n < m \Rightarrow 6 < -5$ yanlış

III. $m + n > 0 \Rightarrow -5 + 6 > 0$ doğru

I ve III doğrudur.

Cevap: B