

Matematik Defteri
Qarpanlara Ayırma - Extra -

1. Soru: $253^2 - 247^2$

$$= (253 - 247) \cdot (253 + 247)$$

$$= 6 \cdot 500$$

$$= 3000$$

Cevap: C

5. Soru:

$$\frac{x-1}{x^2-4x+3}$$

$$\begin{array}{r} x^2-4x+3 \\ x \quad \quad -3 \\ x \quad \quad -1 \end{array}$$

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

$$= \frac{1}{x-3}$$

Cevap: A

2. Soru: $\frac{(x-1) \cdot x \cdot (x^2+x+1) + x}{x^2}$

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

NOT: $(x-1) \cdot (x^2+x+1) = x^3-1$

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

$$= \frac{x \cdot x^3}{x^2} = \frac{x^4}{x^2} = x^2$$

Cevap: B

6. Soru: $\frac{x^2-y^2}{x(x-y)}$

$$= \frac{(x-y) \cdot (x+y)}{x \cdot (x-y)}$$

$$= \frac{x+y}{x}$$

$$= \frac{x}{x} + \frac{y}{x}$$

$$= 1 + \frac{y}{x}$$

Cevap: A

3. Soru: $\frac{2 \cdot (x^2+6x+9)}{4 \cdot (x^2-9)}$ NOT: $x^2+6x+9 = (x+3)^2$

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

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

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

Cevap: A

7. Soru: $(a-2)^2 - (a+2)^2$

$$= (a^2 - 4a + 4) - (a^2 + 4a + 4)$$

$$= a^2 - 4a + 4 - a^2 - 4a - 4$$

$$= -8a$$

Cevap: A

4. Soru: $\frac{3 \cdot (x^2-6x+9)}{3 \cdot (x^2-9)}$ NOT: $x^2-6x+9 = (x-3)^2$

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

$$= \frac{x-3}{x+3}$$

Cevap: A

8. Soru: $\frac{x^2-4}{x^2-4x+4} = \frac{1}{4}$

$$\begin{array}{r} x^2-4x+4 \\ x \quad \quad -2 \\ x \quad \quad -2 \end{array}$$

$$\Rightarrow \frac{(x-2) \cdot (x+2)}{(x-2) \cdot (x-2)} = \frac{1}{4}$$

$$\Rightarrow \frac{x+2}{x-2} = \frac{1}{4}$$

$$4x+8 = x-2$$

$$3x = -10$$

$$x = -\frac{10}{3}$$

Cevap: A

9.Soru: $\frac{x^2 - 3x - 4}{(x+1)(x^2-16)} \cdot (x-2)$

$$= \frac{(x-4)(x+1)(x-2)}{(x+1)(x-4)(x+4)}$$

$$= \frac{(x-2)}{(x+4)}$$

Cevap: A

13.Soru: $58.35 = a.35 + 43.35$

$$58.35 = 35.(a+43)$$

$$58 = a + 43$$

$$15 = a$$

Cevap: A

10.Soru: $x \cdot \left(\frac{1}{x} + \frac{1}{x}\right)$ NOT: $x^{-1} = \frac{1}{x}$

$$= x \cdot \frac{2}{x}$$

$$= 2$$

Cevap: E

14.Soru: $x^2 + y^2 = 4$ $x \cdot y = 3$

$$(x+y)^2 = x^2 + y^2 + 2xy$$

$$(x+y)^2 = 4 + 2 \cdot 3$$

$$(x+y)^2 = 4 + 6$$

$$(x+y)^2 = 10$$

Cevap: D

11.Soru: $x - y = 1$

$$(x+a)^2 - (y+a)^2 = 2a+4$$

$$= (x^2 + 2ax + a^2) - (y^2 + 2ay + a^2) = 2a+4$$

$$= x^2 + 2ax + a^2 - y^2 - 2ay - a^2 = 2a+4$$

$$= x^2 - y^2 + 2a(x-y)$$

$$= (x-y)(x+y) + 2a(x-y)$$

$$= \frac{x-y}{1} \cdot (x+y+2a) = 2a+4$$

$$\begin{aligned} x+y+2a &= 2a+4 \\ x+y &= 4 \end{aligned}$$

Cevap: D

15.Soru: $\frac{a(a-1)}{a-1} \cdot \frac{(a-1)(a+1)}{a(a+1)}$

$$= a-1$$

Cevap: B

12.Soru: $\frac{1+x^2}{3x} \cdot 12$

$$1+x^2 = 36x$$

$$\frac{1+x^2}{4x} = \frac{36x}{4x}$$

$$= 9$$

Cevap: B

16.Soru: $\frac{(x^2+10xy+25y^2) - (x^2-10xy+25y^2)}{x \cdot y}$

$$x \cdot y$$

$$= \frac{x^2+10xy+25y^2 - x^2+10xy-25y^2}{x \cdot y}$$

$$x \cdot y$$

$$= \frac{20xy}{xy}$$

$$= 20$$

Cevap: E

17. Soru: $\frac{(x-y) \cdot (x+y)}{xy^2} \cdot \frac{xy}{(x-y)}$

$$= \frac{x+y}{y}$$

Cevap: D

21. Soru:

$$(166-160) \cdot (166+160) = 978 \cdot k$$

$$6 \cdot 326 = 978 \cdot k$$

$$6 = 3k$$

$$k = 2$$

Cevap: A

18. Soru: $a = 5^{10} + 5^{-10}$ $a = 5^{10} + 5^{-10}$
 $- b = -5^{10} + 5^{-10}$ $+ b = 5^{10} - 5^{-10}$

$a - b = 2 \cdot 5^{-10}$ $a + b = 2 \cdot 5^{10}$

$$a^2 - b^2 = (a-b) \cdot (a+b)$$

$$a^2 - b^2 = 2 \cdot 5^{-10} \cdot 2 \cdot 5^{10}$$

$$a^2 - b^2 = 4 \cdot 5^{-10+10}$$

$$a^2 - b^2 = 4 \cdot 5^0 = 4 \cdot 1 = 4$$

Cevap: A

22. Soru: $\frac{a^2-1}{a^2}$

$\frac{a+1}{a}$

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

$$= \frac{a-1}{a}$$

Cevap: E

19. Soru: $(a+b)^2 = (23)^2$ $a \cdot b = 126$ $a - b = ?$

$$a^2 + 2ab + b^2 = 529$$

$$a^2 + 2 \cdot 126 + b^2 = 529$$

$$a^2 + b^2 = 529 - 252$$

$$a^2 + b^2 = 277$$

$$(a-b)^2 = a^2 + b^2 - 2ab$$

$$(a-b)^2 = 277 - 2 \cdot 126$$

$$(a-b)^2 = 277 - 252$$

$$(a-b)^2 = 25$$

$$a - b = 5$$

Cevap: C

23. Soru: $(x+y)^2 = (8)^2$ $x^2 + y^2 = 34$ $x \cdot y = ?$

$$x^2 + y^2 + 2xy = 64$$

$$34 + 2xy = 64$$

$$2xy = 30$$

$$xy = 15$$

Cevap: E

20. Soru: $\frac{x(x-\cancel{3y})}{y(\cancel{3y-x})}$

$$= \frac{-x}{y}$$

Cevap: C

24. Soru: $x+y=4$ $x-y=3$

$$x^2 - y^2 + 4x + 4y = (x-y) \cdot (x+y) + 4 \cdot (x+y)$$

$$= (x+y) \cdot (x-y+4)$$

$$= 4 \cdot (3+4)$$

$$= 4 \cdot 7$$

$$= 28$$

Cevap: D

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25. Soru: $3^x = a$ diyelim.

$$(3^x - 1) \cdot (3^x + 1) = 26$$

$$(a - 1) \cdot (a + 1) = 26$$

$$a^2 - 1 = 26$$

$$a^2 = 27$$

$$(3^x)^2 = 3^3$$

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

$$2x = 3$$

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

Cevap: B

29. Soru: $\frac{ab \cdot (b^2 + a)}{b(a+1) - (a+1)} : \frac{a+b^2}{b-1}$

$$= \frac{ab \cdot (b^2 + a)}{(a+1) \cdot (b-1)} \cdot \frac{b-1}{(a+b^2)}$$

$$= \frac{ab}{a+1}$$

Cevap: E

26. Soru: $\frac{(a-b) \cdot (a^2 + ab + b^2)}{a^2 + b^2 + 2ab - ab}$

$$= \frac{(a-b) \cdot (a^2 + ab + b^2)}{(a^2 + ab + b^2)}$$

$$= a - b$$

$$= a - b$$

Cevap: A

30. Soru: $\frac{x^2 + 3x - 4}{x^2 + 3x - 4}$

$$\frac{1-x}{x} \cdot \frac{4+x}{x}$$

$$= \frac{(x+4) \cdot (x-1)}{(1-x) \cdot (4+x)}$$

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

$$= -x^2$$

Cevap: A

27. Soru: $k+2 + \frac{1}{k+2} = 5+2$ Her tarafa 2 ekledik

$k+2 = a$ diyelim.

$$a^2 + \frac{1}{a^2} = ?$$

$$\left(a + \frac{1}{a}\right)^2 = (7)^2$$

$$a^2 + 2 \cdot a \cdot \frac{1}{a} + \frac{1}{a^2} = 49$$

$$a^2 + 2 + \frac{1}{a^2} = 49$$

$$a^2 + \frac{1}{a^2} = 47$$

Cevap: D

31. Soru: $x - \sqrt{x} = 5$

$$= 3x - \frac{\sqrt{x} \cdot (3\sqrt{x} + 5)}{\sqrt{x}}$$

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

$$= 3 \frac{(x - \sqrt{x}) - 5}{5}$$

$$= 3 \cdot 5 - 5$$

$$= 15 - 5 = 10$$

Cevap: B

28. Soru: $\frac{y \cdot (y - 2x)}{x \cdot (y - 2x)} = 3y$

$$\Rightarrow \frac{y}{x} = 3y$$

$$\Rightarrow \frac{1}{x} = 3$$

$$\Rightarrow x = \frac{1}{3}$$

Cevap: B

32. Soru: $2^a = b + 3$

$$\frac{1}{2^a} = b - 3$$

$$\Rightarrow \frac{1}{b+3} = b - 3$$

$$\Rightarrow 1 = (b-3) \cdot (b+3)$$

$$\Rightarrow 1 = b^2 - 9$$

$$\Rightarrow b^2 = 10$$

Cevap: B

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33. Soru: $\frac{x+5}{x} \cdot \frac{x^2-25}{x^2}$

$$= \frac{x+5}{x} \cdot \frac{x^2}{(x-5)(x+5)}$$

$$= \frac{x}{x-5}$$

Cevap: D

36. Soru: $\frac{x \cdot (1+\sqrt{x}) + (\sqrt{x}+1)}{(x-1) \cdot (x+1)} = -\frac{5}{2}$

$$\frac{(\sqrt{x}+1)(x+1)}{(x-1)(x+1)} = -\frac{5}{2} \quad (\text{NOT: } x-1 = (\sqrt{x})^2 - 1^2)$$

$$\Rightarrow \frac{\sqrt{x}+1}{(\sqrt{x}-1)(\sqrt{x}+1)} = -\frac{5}{2}$$

$$\Rightarrow \frac{1}{\sqrt{x}-1} = -\frac{5}{2}$$

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

$$5\sqrt{x} = 3$$

$$\sqrt{x} = \left(\frac{3}{5}\right)^2$$

$$x = \frac{9}{25}$$

Cevap: B

34. Soru: $\frac{1}{a} = \frac{a+b}{9} = \frac{3}{b}$

$$\frac{1}{a} \times \frac{a+b}{9} = \frac{1}{a} \times \frac{3}{b}$$

$$a^2+ab=9 \quad 3a=b \quad (\text{b yerine } 3a \text{ yaz})$$

$$a^2+a(3a)=9$$

$$a^2+3a^2=9$$

$$4a^2=9$$

$$a^2 = \frac{9}{4}$$

$$a = \frac{3}{2}$$

$$3 \cdot \frac{3}{2} = b$$

$$\frac{9}{2} = b$$

$$a \cdot b = \frac{3}{2} \cdot \frac{9}{2}$$

$$a \cdot b = \frac{27}{4}$$

Cevap: A

37. Soru: $x^2 = x+1$

$$x^3-2x^2 = x^2(x-2) \quad (x^2 \text{ gördüğümüz yere } (x+1) \text{ koyalım.})$$

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

$$= x^2-2x+x-2$$

$$= x^2-x-2 \quad (x^2 = x+1)$$

$$= x+1-x-2$$

$$= -1$$

Cevap: B

35. Soru: $\frac{\sqrt{x+4}}{\sqrt{x}-\sqrt{3}} \times \frac{\sqrt{x}+\sqrt{3}}{\sqrt{x}-4}$

$$\sqrt{x+4} \cdot \sqrt{x-4} = (\sqrt{x}-\sqrt{3}) \cdot (\sqrt{x}+\sqrt{3})$$

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

$$\left(\sqrt{x^2-16}\right)^2 = (x-3)^2 \quad (\text{Karesini alalım.})$$

$$x^2-16 = x^2-6x+9$$

$$6x = 25$$

$$x = \frac{25}{6}$$

Cevap: D

38. Soru: $\frac{a-1}{b+1} \times 3 \quad a^2-(3b)^2=40$

$$a-1 = 3b+3$$

$$a-3b = 4$$

$$(a-3b)(a+3b) = 40$$

$$4$$

$$10$$

$$a-3b = 4$$

$$+ \quad a+3b = 10$$

$$2a = 14$$

$$\boxed{a=7}$$

$$a-3b = 4$$

$$7-3b = 4$$

$$3b = 3$$

$$\boxed{b=1}$$

$$a \cdot b = 7 \cdot 1 = 7$$

Cevap: A