

1. $|x-5|^{|2x-6|} = 1$

1) $|x-5| = 1 \begin{cases} x-5=1 \Rightarrow \boxed{x=6} \\ x-5=-1 \Rightarrow \boxed{x=4} \end{cases}$

2) $|2x-6| = 0 \Rightarrow 2x-6=0 \Rightarrow 2x=6 \Rightarrow \boxed{x=3}$

x değerlerinin toplamı $6 + 4 + 3 = 13$

Cevap: C

2. $|x-1| < 2 \Rightarrow -2 < x-1 < 2 \Rightarrow -2+1 < x < 2+1$
 $\Rightarrow \boxed{-1 < x < 3}$

$$\begin{array}{l} \underbrace{|x+2|}_{>0} + \underbrace{|x-3|}_{<0} + \underbrace{|x-4|}_{<0} = (x+2) - (x-3) - (x-4) \\ = x+2 - x+3 - x+4 \\ = \boxed{-x+9} \end{array}$$

Cevap: B

3. $x \in \mathbb{R}^+, x < \frac{1}{5}$

$$\begin{array}{l} -\underbrace{|x - \underbrace{|1-x|}_{>0}}| = -|x - (1-x)| = -|x-1+x| \\ = -\underbrace{|2x-1|}_{<0} \\ = -(-(2x-1)) \\ = 2x-1 \end{array}$$

Cevap: D

4. a. $|a| < 0 \Rightarrow a < 0$

b. $|b| > 0 \Rightarrow b > 0$

A) $\underbrace{a^3}_{-} \cdot \underbrace{b^3}_{+} > 0 \rightarrow$ yanlış (< 0 olmalı)

B) $\underbrace{a^{15}}_{-} \cdot \underbrace{b^{15}}_{+} > 0 \rightarrow$ yanlış (< 0 olmalı)

C) $\underbrace{a^7}_{-} \cdot \underbrace{b^4}_{+} > 0 \rightarrow$ yanlış (< 0 olmalı)

D) $\underbrace{a^4}_{+} \cdot \underbrace{b^7}_{+} > 0 \rightarrow$ Doğru

E) $\underbrace{a^{10}}_{+} \cdot \underbrace{b^{10}}_{+} < 0 \rightarrow$ yanlış (> 0 olmalı)

Cevap: D

5. $x > 1, 9^{\left|\frac{x}{2}-1\right|^{-1}} = \frac{1}{3} \Rightarrow 9^{\left|\frac{x}{2}-1\right|^{-1}} = 3^{-1}$

$\Rightarrow 9^{\left|\frac{x}{2}-1\right|} = 3$

$\Rightarrow 3^{2\left|\frac{x}{2}-1\right|} = 3^1$

$\Rightarrow 2\left|\frac{x}{2}-1\right| = 1$

$\Rightarrow \left|\frac{x}{2}-1\right| = \frac{1}{2}$

1) $\frac{x}{2} - 1 = \frac{1}{2} \Rightarrow \frac{x}{2} = \frac{3}{2} \Rightarrow \boxed{x=3}$

2) $\frac{x}{2} - 1 = -\frac{1}{2} \Rightarrow \frac{x}{2} = \frac{1}{2} \Rightarrow \boxed{x=1}$ olmaz! ($x > 1$)

Cevap: C

6. $|2x-13| + x = 7 \Rightarrow \text{Ç.K.} = ?$

$|2x-13| = 7-x$

$\Rightarrow 1) 2x-13 = 7-x \Rightarrow 3x = 20 \Rightarrow \boxed{x = \frac{20}{3}}$

2) $2x-13 = -7+x \Rightarrow \boxed{x=6}$

$\Rightarrow \text{Ç.K.} = \left\{6, \frac{20}{3}\right\}$

Cevap: A

7. $a, b, c \in \mathbb{Z}^+; \frac{1}{a} < \frac{1}{b} < \frac{1}{c} \Rightarrow a > b > c$

$$\begin{array}{l} \underbrace{|2a-b|}_{>0} + \underbrace{|2b-c|}_{>c} - \underbrace{|2a-c|}_{>0} = (2a-b) + (2b-c) - (2a-c) \\ = 2a - b + 2b - c - 2a + c \\ = \boxed{b} \end{array}$$

Cevap: E

8. $x < \frac{5}{3}$

$$\begin{aligned}
& |5 - 3x| - \sqrt{9x^2 - 30x + 25} + 3x - 1 \\
&= |5 - 3x| - \sqrt{(3x - 5)^2} + 3x - 1 \\
&= |5 - 3x| - |3x - 5| + 3x - 1 \quad (|5 - 3x| = |3x - 5|) \\
&= \boxed{3x - 1}
\end{aligned}$$

Cevap: B

9. $A = \{x: x \in \mathbb{R}, |x - 3| = 3x - 1\} \Rightarrow A = ?$

$|x - 3| = 3x - 1$

1) $x - 3 = 3x - 1 \Rightarrow 2x = -2 \Rightarrow x = -1$ olmaz!

Çünkü ilk ifadede x yerine -1 yazdığımızda eşitliği sağlamaz.

$$\begin{aligned}
|x - 3| = 3x - 1 &\Rightarrow |-1 - 3| \stackrel{?}{=} 3 \cdot (-1) - 1 \\
&\Rightarrow |-4| \stackrel{?}{=} -3 - 1 \\
&4 \neq -4
\end{aligned}$$

2) $x - 3 = -3x + 1 \Rightarrow 4x = 4 \Rightarrow \boxed{x = 1}$

$$\begin{aligned}
|x - 3| = 3x - 1 &\Rightarrow |1 - 3| \stackrel{?}{=} 3 \cdot 1 - 1 \\
&\Rightarrow |-2| \stackrel{?}{=} 2 \\
&2 = 2
\end{aligned}$$

$\Rightarrow A = \{1\}$

Cevap: D

10. $x^2 - 6x + 5 < 0 \Rightarrow (x - 5) \cdot (x - 1) < 0 \Rightarrow \boxed{x > 0}$

$$\begin{array}{c}
\downarrow \\
x \quad -5 \\
x \quad -1
\end{array}$$

$$\begin{aligned}
& \begin{array}{c} x \quad 2 \\ x \quad -1 \\ \uparrow \quad \uparrow \end{array} \\
& \frac{||x \cdot (x - 1)| - |x^2 + x - 2||}{2x^2 - 3x + 1} = \frac{||x \cdot |x - 1|| - |(x + 2) \cdot (x - 1)||}{(2x - 1) \cdot (x - 1)} \\
& \begin{array}{c} \downarrow \quad \downarrow \\ 2x \quad -1 \\ x \quad -1 \end{array} \\
& = \frac{||\underbrace{x - 1}_{>0}| \cdot (|\underbrace{x}_{>0}| - \underbrace{|x + 2|}_{>0})||}{(2x - 1) \cdot (x - 1)} \\
& = \frac{|(x - 1) \cdot (x - x - 2)|}{(2x - 1) \cdot (x - 1)} \\
& = \frac{2 \cdot (\cancel{x - 1})}{(2x - 1) \cdot (\cancel{x - 1})} = \frac{2}{2x - 1}
\end{aligned}$$

Cevap: B

11. $a \cdot b > 0, \underbrace{a^2 \cdot b < 0}$

 $a^2 > 0$ olduğundan $\boxed{b < 0}$ olmalı.

$\underbrace{a \cdot b > 0}$

 $b < 0$ olduğundan $\boxed{a < 0}$ olmalı.

$$\begin{aligned}
& \Rightarrow \frac{\underbrace{|b|}_{<0} - \underbrace{|a + b|}_{<0} - 2}{2 - a} = \frac{-b - (-(a + b)) - 2}{2 - a} \\
& = \frac{-\cancel{b} + a + \cancel{b} - 2}{2 - a} \\
& = \frac{a - 2}{-(a - 2)} = \boxed{-1}
\end{aligned}$$

Cevap: C

12. $a < b < 0 < c < d$

$$\Rightarrow \underbrace{|2a-c|}_{<0} - \underbrace{|b-2d|}_{<0} + \underbrace{|2d-c|}_{>0} + \underbrace{|b|}_{<0}$$

$$= -(2a-c) - (-(b-2d)) + (2d-c) - b$$

$$= -2a + c + b - 2d + 2d - c - b$$

$$= \boxed{-2a}$$

Cevap: D

13. $|a+3| + |b-4| + |ac-21| = 0 \Rightarrow a+b+c = ?$

$$a+3=0 \Rightarrow \boxed{a=-3}$$

$$b-4=0 \Rightarrow \boxed{b=4}$$

$$ac-21=0 \Rightarrow ac=21 \Rightarrow -3 \cdot c=21 \Rightarrow \boxed{c=-7}$$

$$\Rightarrow a+b+c = -3+4-7 = \boxed{-6}$$

Cevap: E

14. $||m|| = 2m-1$

$$||2+n|| = ||-n|| \Rightarrow 2 \cdot (2+n) - 1 = 2 \cdot (-n) - 1$$

$$4 + 2n - 1 = -2n - 1$$

$$2n + 3 = -2n - 1$$

$$4n = -4$$

$$\boxed{n=-1}$$

Cevap: B

15. $x, y \in \mathbb{Z}^+$;

$$x+y=3 \begin{cases} x=2, y=1 \Rightarrow |x-y| = |2-1| = |1| = 1 \\ x=1, y=2 \Rightarrow |x-y| = |1-2| = |-1| = 1 \end{cases}$$

$$3 \cdot \underbrace{|x-y|}_1 - a \cdot \underbrace{|y-x|}_1 = 5 \Rightarrow 3 - a = 5$$

$$\Rightarrow \boxed{a=-2}$$

Cevap: B

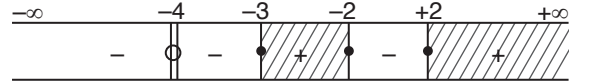
16. $\frac{(x^2-4) \cdot (x+3)}{|x+4|} \geq 0 \Rightarrow \text{Ç.K.} = ?$

$$x^2-4=0 \Rightarrow x^2=4 \Rightarrow \boxed{x=+2}, \boxed{x=-2}$$

$$x+3=0 \Rightarrow \boxed{x=-3}$$

$$|x+4|=0 \Rightarrow x+4=0$$

$\Rightarrow \boxed{x=-4} \rightarrow$ $\left\{ \begin{array}{l} \text{Çift katlı köktür. Aynı zamanda} \\ \text{paydayı sıfır yaptığından çözüm} \\ \text{kümesine dahil edilmez.} \end{array} \right.$



$$\text{Ç.K.} = [-3, -2] \cup [2, +\infty)$$

Cevap: C

17. $|x| = -x \Rightarrow \boxed{x < 0}$

$$y^2 < y \Rightarrow \boxed{0 < y < 1}$$

$$\Rightarrow |x-y| - \sqrt{x^2} - \sqrt{y^2} + 3|x|$$

$$= |x-y| - |x| - |y| + 3|x|$$

$$= \underbrace{|x-y|}_{<0} + 2 \cdot \underbrace{|x|}_{<0} - \underbrace{|y|}_{>0}$$

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

$$= -x + y - 2x - y$$

$$= \boxed{-3x}$$

Cevap: C

18. $y < 0 < x \Rightarrow \underbrace{|y|}_{<0} - \underbrace{|x-y|}_{>0} + \underbrace{|x|}_{>0} = -y - (x-y) + x$

$$= -y - x + y + x$$

$$= 0$$

Cevap: E

$$19. |x - 2018| = 2018 - x \Rightarrow x - 2018 \leq 0 \Rightarrow \boxed{x \leq 2018}$$

$$|x - 1234| = x - 1234 \Rightarrow x - 1234 \geq 0 \Rightarrow \boxed{x \geq 1234}$$

$\Rightarrow 1234 \leq x \leq 2018 \Rightarrow$ Bu eşitsizliği sağlayan x tamsayı değerlerinin sayısı:

$$2018 - 1234 + 1 = \boxed{785}$$

Cevap: E

$$20. x^2 \cdot y < 0 \Rightarrow x^2 > 0 \text{ olduğundan } \boxed{y < 0} \text{ olmalı.}$$

$$x \cdot y > 0 \Rightarrow y < 0 \text{ olduğundan } \boxed{x < 0}$$

$$\frac{\underbrace{|x|}_{<0} - \underbrace{|x+y|}_{<0} - 1}{1-y} = \frac{-x - (-(x+y)) - 1}{1-y}$$
$$= \frac{-x + x + y - 1}{1-y} = \frac{y-1}{1-y} = \boxed{-1}$$

Cevap: C