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. $|x-1| < 2 \Rightarrow -2 < x-1 < 2 \Rightarrow -2+1 < x < 2+1$

$\Rightarrow \boxed{-1 < x < 3}$

$\underbrace{|x+2|}_{>0} + \underbrace{|x-3|}_{<0} + \underbrace{|x-4|}_{<0} = (x+2) - (x-3) - (x-4)$

$= \cancel{x} + 2 - \cancel{x} + 3 - x + 4$

$= \boxed{-x+9}$

Cevap: B

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

$-|x - \underbrace{|1-x|}_{>0}| = -|x-(1-x)| = -|x-1+x|$

$= -\underbrace{|2x-1|}_{<0}$

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

$= 2x-1$

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

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

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

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

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

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. $|2x-13| + x = 7 \Rightarrow$ Ç.K = ?

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

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

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

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

Cevap: A

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

$\underbrace{|2a-b|}_{>0} + \underbrace{|2b-c|}_{>c} - \underbrace{|2a-c|}_{>0} = (2a-b) + (2b-c) - (2a-c)$

$= \cancel{2a} - b + 2b - \cancel{c} - \cancel{2a} + \cancel{c}$

$= \boxed{b}$

Cevap: E

TASARI EĞİTİM YAYINLARI

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

$|5-3x| - \sqrt{9x^2-30x+25} + 3x - 1$

$= |5-3x| - \sqrt{(3x-5)^2} + 3x - 1$

$= |\cancel{5-3x}| - |\cancel{3x-5}| + 3x - 1 \quad (|5-3x| = |3x-5|)$

$= \boxed{3x-1}$

Cevap: B

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

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

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

Çünkü ilk ifadede x yerine –1 yazdığımızda eşitliği sağlamaz.

$|x-3| = 3x-1 \Rightarrow |-1-3| \stackrel{?}{=} 3.(-1)-1$

$\Rightarrow |-4| \stackrel{?}{=} -3-1$

$4 \neq -4$

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

$|x-3| = 3x-1 \Rightarrow |1-3| \stackrel{?}{=} 3.1-1$

$\Rightarrow |-2| \stackrel{?}{=} 2$

$2 = 2$

$\Rightarrow A = \{1\}$

Cevap: D

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

$x \quad -5$

$x \quad -1$

$x \quad 2$

$x \quad -1$

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

$2x \quad -1$

$x \quad -1$

$$= \frac{||\underbrace{x-1}_{>0}|.(\underbrace{|x|}_{>0}-\underbrace{|x+2|}_{>0})|}{(2x-1).(x-1)}$$

$$= \frac{|(x-1).(\cancel{x}-\cancel{x}-2)|}{(2x-1).(x-1)}$$

$$= \frac{2.(\cancel{x-1})}{(2x-1).(\cancel{x-1})} = \boxed{\frac{2}{2x-1}}$$

Cevap: B

11. $a.b>0,\ \underbrace{a^2.b<0}_{a^2>0}$ olduğundan $\boxed{b<0}$ olmalı.

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

$$\Rightarrow \frac{\underbrace{|b|}_{<0}-\underbrace{|a+b|}_{<0}-2}{2-a} = \frac{-b-(-(a+b))-2}{2-a}$$

$$= \frac{-\cancel{b}+a+\cancel{b}-2}{2-a}$$

$$= \frac{a-2}{-(a-2)} = \boxed{-1}$$

Cevap: C

TASARI EĞİTİM YAYINLARI

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

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

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

$= -2a + \cancel{c} + \cancel{b} - \cancel{2d} + \cancel{2d} - \cancel{c} - \cancel{b}$

$= \boxed{-2a}$

Cevap: D

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

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

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

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

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

Cevap: E

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

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

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

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

$4n = -4$

$\boxed{n=-1}$

Cevap: B

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

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

$3.|x-y| - a.|y-x| = 5 \Rightarrow 3.\underbrace{|x-y|}_{1} - a.\underbrace{|x-y|}_{1} = 5$

$\Rightarrow 3 - a = 5$

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

Cevap: B

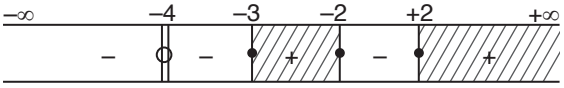
16. $\dfrac{(x^2-4).(x+3)}{|x+4|} \geq 0 \Rightarrow$ Ç.K = ?

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

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

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

$\Rightarrow \boxed{x=-4} \rightarrow$ {Çift katlı köktür. Aynı zamanda paydayı sıfır yaptığından çözüm kümesine dahil edilmez.



Ç.K = $[-3, -2] \cup [2, +\infty)$

Cevap: C

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

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

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

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

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

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

$= -x + \cancel{y} - 2x - \cancel{y}$

$= \boxed{-3x}$

Cevap: C

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

$= -\cancel{y} - \cancel{x} + \cancel{y} + \cancel{x}$

$= 0$

Cevap: E

TASARI EĞİTİM YAYINLARI

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

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

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

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

Cevap: E

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

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

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

$$= \frac{-\cancel{x}+\cancel{x}+y-1}{1-y} = \frac{y-1}{1-y} = \boxed{-1}$$

Cevap: C

TASARI EĞİTİM YAYINLARI