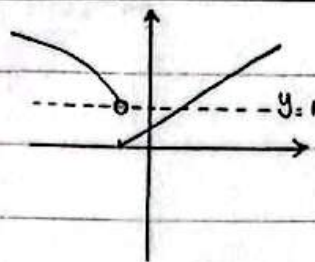


۲۰ آفرین

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$$x = \begin{cases} 3y-1 & y \geq 0 \Rightarrow y = \frac{x+1}{3} \\ -y^2 & y > 1 \Rightarrow y = \sqrt{-x} \end{cases}$$



تابع است

(۲)

$$g(x) = \frac{x f(x-1)}{f(x)} \quad f(x) = 0 \Rightarrow x = \{-1, 3, \infty\}$$

(۲)

$$f(x-1) = 0 \Rightarrow x = \{-2, \infty, 4\}$$

$$\frac{-1}{-1} + \frac{-2}{-1} + \frac{0}{-1} + \frac{3}{-1} + \frac{\infty}{-1} + \frac{4}{-1} + \frac{\infty}{-1}$$

$$\Rightarrow D_g = (-1, 2) \cup [0, 3) \cup [4, +\infty)$$

فقط دو قسمت باشد که $x=4$ در دامنه است و $x=2$ در دامنه نیست (بسته است) و $x=3$ در دامنه نیست (بسته نیست)

$$x^3 - 4x = 0 \Rightarrow x(x^2 - 4) = 0 \Rightarrow x(x-2)(x+2) = 0 \Rightarrow D_f = \mathbb{R} - \left\{0, -2, 2\right\}$$

(۲)

$$g(x) = \sqrt{f(x)} \Rightarrow \frac{-2}{-1} + \frac{0}{-1} + \frac{2}{-1} + \frac{\infty}{-1} \Rightarrow D = (-2, 0) \cup (2, +\infty)$$

(ب)

$$y = \sqrt{\frac{x-2}{x^2-2x^2-1}} \Rightarrow \frac{x-2}{x^2-2x^2-1} \geq 0 \Rightarrow \frac{x-2}{(x^2-4)(x^2+2)} \geq 0 \Rightarrow \frac{x-2}{\left(\frac{x-2}{2}\right)\left(\frac{x+2}{-2}\right)\left(\frac{x^2+2}{2}\right)} \geq 0$$

ریشه ندارد

$$\Rightarrow \frac{-2}{-1} + \frac{2}{-1} \Rightarrow D = (-2, 2) \cup (2, +\infty)$$

$$\frac{x^2+1}{x^2-2} \Rightarrow x^2-2 < 0 \Rightarrow [-2, 2] \Rightarrow -2 < x < 2 \Rightarrow -3 < x < -2$$

$$\Rightarrow D = \mathbb{R} - (-3, -2)$$

$$f(x) = \frac{\sqrt{x(x^2-1)}}{\sqrt{|x|+x}} \Rightarrow \textcircled{1} x(x^2-1) \geq 0 \Rightarrow \frac{-1}{-1} + \frac{0}{-1} + \frac{1}{-1} \Rightarrow [-1, 0] \cup [1, +\infty)$$

(۲)

$$\textcircled{2} |x|+x > 0 \Rightarrow \begin{cases} x > 0 \\ x < 0 \end{cases} \Rightarrow \begin{cases} x > 0 \\ x < 0 \end{cases} \Rightarrow [0, +\infty)$$

$$\Rightarrow \frac{1}{1} \Rightarrow D = [1, +\infty)$$

1. $f(x) = \frac{\sqrt{|x-2|} - x^2}{|x| - 1}$ ① $|x| - 1 \neq 0 \Rightarrow x \neq \pm 1$ ② $|x-2| - x^2 \geq 0$

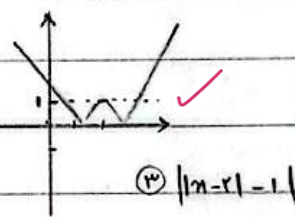
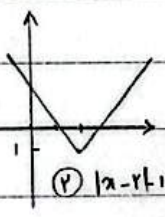
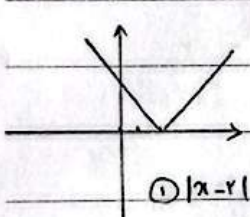
$\Rightarrow \frac{x^2}{-x+2-x^2} \geq 0 \mid \frac{x^2}{x-2-x^2} \geq 0 \times$
 $(x+2)(x-1) \leq 0 \quad \hookrightarrow \text{Max (5, 2) Min (0, 1)}$
 $\frac{-2}{+} \frac{1}{-}$

2. $y = \sqrt{(x-2)(x-2)} \Rightarrow (x-2)(x-2) \geq 0$ $\Rightarrow D = \mathbb{R}$ ✓

3. $y = \sqrt{|x-1|} [x-3] \Rightarrow |x-1| [x-3] \geq 0$ $\Rightarrow D = [3, +\infty) \cup \{1\}$

4. $y = \frac{1}{||x-2|-1| - k}$ $\Rightarrow ||x-2|-1| - k \neq 0$

$k=1$ $\checkmark$ $y=1$ $\checkmark$



5. $f(x) = \frac{x^2+3x+2}{x^2+3x+2} \Rightarrow$ ① $x^2+3x+2 \neq 0 \Rightarrow (x+1)(x+2) \neq 0 \Rightarrow x \neq -1, -2$
 ② $x-1 \neq 0 \Rightarrow x \neq 1$ $\Rightarrow D = \mathbb{R} \setminus \{-1, -2, 1\}$ ✓

6. $x^2 - 4x + 4 = 0 \Rightarrow (x-2)^2 = 0 \Rightarrow x = 2$ $\checkmark$

7. $y = \lg \lg \frac{1}{x}$ $\Rightarrow$ ① $x > 0, x \neq 1$ ② $x+1 > 0 \Rightarrow x > -1, x+1 \neq 1 \Rightarrow x \neq 0$
 ③ $\lg \frac{1}{x} > 0 \Rightarrow 0 < x < 1 \Rightarrow D = (0, 1)$ ✓

8. $D = [a, 3] \Rightarrow -a \leq 3x^2 - 1 \leq 3 \Rightarrow 11 \leq 3x^2 \leq 4$ ✓

9. $3x^2 \leq 4 \Rightarrow x^2 \leq \frac{4}{3} \Rightarrow -\frac{2\sqrt{3}}{3} \leq x \leq \frac{2\sqrt{3}}{3}$
 $D = [-\frac{2\sqrt{3}}{3}, \frac{2\sqrt{3}}{3}]$ ✓

Senobar