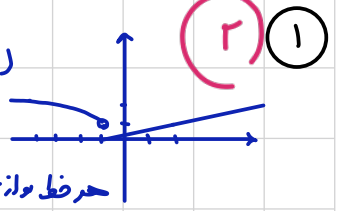


$x = \begin{cases} 2y-1 & y \geq 0 \\ -y^2 & y > 1 \end{cases}$ رسم نمودار ① $y=0 \rightarrow 2(0)-1=-1$ ② $y=1 \rightarrow 2(1)-1=1$ ③ $y=2 \rightarrow 2(2)-1=3$

④ $y=1 \rightarrow x=-(1)^2=-1$ ⑤ $y=2 \rightarrow x=-(2)^2=-4$
 $c|_1^{-1}$ ⑥ $b|_2^{-4}$

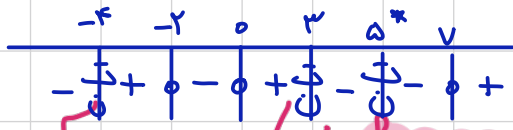


✓ حفظ داری محور و خط نمودار را حتماً در یک صفحه قطع می‌کنند ← تابع هست

$x_0 f(x-x) \rightarrow -2, 5, 7$

$x \rightarrow 0$

$x_0 f(x) = -4, 3, 5$



$D_f = (-4, -2) \cup [0, 3) \cup [7, +\infty)$ ✓

فقط خواست باشد که $x=4$ در دامنه $f(x)$ و $x=4$ در دامنه $f(x-2)$ نیست نه در بازه است اوده نیست

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

الف) $x^2 - 4x \neq 0 \rightarrow x(x-4) \neq 0 \rightarrow x \neq 0, 4 \rightarrow D_{f(x)} = \mathbb{R} - \{0, 4\}$ ✓

ب) $\frac{2x^2 - 3x + 2}{x^2 - 4x} \geq \frac{1}{x-2}$
 $\rightarrow \frac{2x^2 - 3x + 2}{x^2 - 4x} - \frac{1}{x-2} \geq 0$
 $\rightarrow \frac{2x^2 - 3x + 2 - (x^2 - 4x)}{x^2 - 4x} \geq 0$
 $\rightarrow \frac{x^2 + x + 2}{x^2 - 4x} \geq 0$
 $\rightarrow \frac{(x+2)(x+1)}{x(x-4)} \geq 0$
 $D_{f(x)} = (-2, 0) \cup [1, 4) \cup [4, +\infty)$ ✓

وقت!

الف) $\frac{x-2}{x^2 - 2x^2 - 1} \geq 0$
 $\rightarrow \frac{x-2}{-x^2 - 1} \geq 0$
 $\rightarrow \frac{x-2}{-(x^2 + 1)} \geq 0$
 $\rightarrow \frac{x-2}{x^2 + 1} \leq 0$
 $\rightarrow x-2 \leq 0$
 $\rightarrow x \leq 2$
 $D = (-2, +\infty) - \{2\}$ ✓

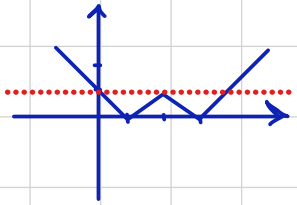
ب) $4 - 2[-x] \neq 0 \rightarrow 2[-x] \neq 4 \rightarrow [-x] \neq 2$
 $([-x] = 2 \rightarrow 2 \leq -x < 3 \rightarrow -2 \geq x > -3)$
 $D = \mathbb{R} - (-3, -2)$ ✓

الف) $x(x^2 - 1) \geq 0$
 $\rightarrow x(x-1)(x+1) \geq 0$
 $\rightarrow x > 0 \rightarrow x > 1 \rightarrow x > 0$ ✓
 $\rightarrow x < 0 \rightarrow 0 > 0$ ✗
 $\Rightarrow [1, +\infty)$ ✓

ب) $\frac{\sqrt{|x-2| - x^2}}{|x|-1} \geq 0$
 $\rightarrow \sqrt{|x-2| - x^2} \geq 0$
 $\rightarrow |x-2| - x^2 \geq 0$
 $\rightarrow |x-2| \geq x^2$
 $\rightarrow |x-2| \geq 0$
 $\rightarrow |x-2| \geq x^2$
 $\rightarrow |x-2| \geq 0$
 $\rightarrow |x-2| \geq x^2$
 $\rightarrow |x-2| \geq 0$
 $\rightarrow |x-2| \geq x^2$
 $\Rightarrow D = [-2, 1] \cup [2, +\infty)$ ✓

الف) $y = \sqrt{(x-2)(x-3)}$
 $\rightarrow (x-2)(x-3) \geq 0$
 $\rightarrow x \leq 2$ or $x \geq 3$
 $\Rightarrow D = \mathbb{R}$ ✓
 $y = \sqrt{|x-1| [x+3]}$
 $\rightarrow |x-1| [x+3] \geq 0$
 $\rightarrow |x-1| \geq 0$
 $\rightarrow |x-1| \geq 0$
 $\rightarrow |x-1| \geq 0$
 $\Rightarrow D = \{1\} \cup [3, +\infty)$ ✓

$||x-2|-1| - k \neq 0 \rightarrow ||x-2|-1| \neq k$
 $\Rightarrow k=1$ ✓



$x^2 + 3x + 2 \neq 0 \rightarrow x \neq -1, -2$
 $x-1 \neq 0 \rightarrow x \neq 1$
 $\frac{x+1}{x-1} \neq 0 \rightarrow x \neq -1$
 $\Rightarrow x=3$ ✓
 $x^2 - 4x + 9 = 0 \rightarrow (x-3)^2 = 0 \rightarrow x=3$ ✓

$x+1 > 0 \rightarrow x > -1$, $x+1 \neq 1 \rightarrow x \neq 0$, $x > 0$, $\log \frac{1}{x} > 0 \rightarrow \log \frac{1}{x} > \log \frac{1}{x}$
 $\Rightarrow D = (0, 1)$ ✓

$-5 \leq 3x^2 - 1 \leq 2 \Rightarrow \begin{cases} 3x^2 \leq 3 \rightarrow x^2 \leq 1 \\ 3x^2 \geq -2 \end{cases}$
 $\Rightarrow -\frac{1}{\sqrt{3}} \leq x \leq \frac{1}{\sqrt{3}}$ ✓

$$f(x) \geq 0 \rightarrow x^r - rx \geq 0 \rightarrow \begin{array}{c|c|c|c|c} -r & 0 & r & & \\ \hline - & + & - & + & \end{array} \quad D_{\sqrt{f}} = (-r, 0) \cup (r, +\infty) \quad (-r)$$

$$1) |x| - 1 \neq 0 \rightarrow |x| \neq 1 \rightarrow x \neq \pm 1 \quad (x \neq 1)$$

$$2) |x-r| - x^r \geq 0 \rightarrow \begin{array}{c|c} \begin{array}{c} -x^r - x + r \geq 0 \\ \hline -r \quad 1 \\ - \quad + \quad - \end{array} & \begin{array}{c} -x^r + x - r \geq 0 \\ \Delta < 0 \quad \times \end{array} \end{array} \quad D_f = [-r, 1) - \{-1\}$$