

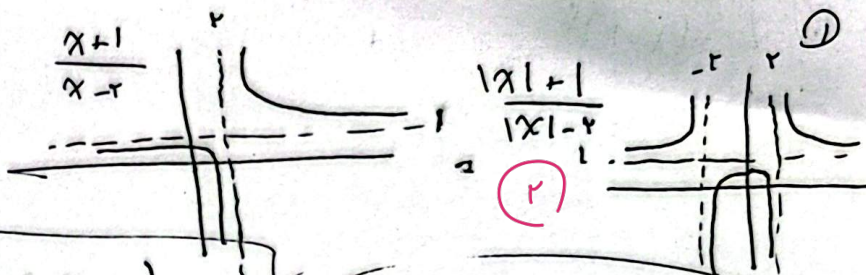
و

14, 25

داده شده

این سه شرطی

$$a) y = \frac{|x|+1}{|x|-2} \Rightarrow$$



$$\Rightarrow \left[-\infty, -\frac{1}{2}\right] \cup (1, +\infty) = R \Rightarrow R = \mathbb{R} - \left(-\frac{1}{2}, 1\right] \checkmark$$

$$\Rightarrow \frac{x^2+1}{|x|} = |x| + \frac{1}{|x|} \Rightarrow x + \frac{1}{x} \geq 2 : x > 0 \Rightarrow |x| + \frac{1}{|x|} \geq 2$$

$$\Rightarrow R = [2, +\infty) \checkmark$$

$$\frac{x^2+2x-2}{x+2}$$

~~max(x)~~

(2) (3)

$$\hookrightarrow x + \frac{-2-x}{x+2} \rightarrow x-1 + \frac{1}{x+2}$$

~~max(x)~~

$$\frac{(x+2) + \left(\frac{1}{x+2}\right) - 1}{x+2} \Rightarrow \epsilon + \frac{1}{\epsilon} : \epsilon \in \mathbb{R} \Rightarrow$$

$$\left. \begin{array}{l} 2 \leq \epsilon + \frac{1}{\epsilon} \\ \epsilon + \frac{1}{\epsilon} \leq -2 \end{array} \right\} \Rightarrow \epsilon + \frac{1}{\epsilon} - 2$$

$$\Rightarrow R = \mathbb{R} \cdot (-2, 2) \checkmark$$

$$\left(x - \frac{1}{x}\right)^2$$

$$x^2 - x + 1 \rightarrow \text{مشتق}$$

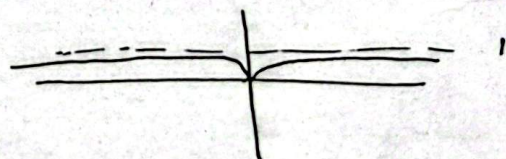
$$D_f = \mathbb{R} \checkmark$$

(2) (3)

$$\Rightarrow 1 + \frac{1}{x} \times \frac{1}{x^2 - x + 1}$$

$$\frac{-b}{2a} = \frac{1}{2} \Rightarrow x^2 - x + 1 = \frac{1}{2}$$

$$\Rightarrow [0, 1) = R$$



$$\begin{array}{l} \text{max} \rightarrow x = +\infty \\ \text{min} \rightarrow x = \frac{1}{2} \end{array} \Rightarrow 0$$

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

$$\Rightarrow [0, 1) \checkmark = R$$

$$c1) \sqrt{-(x-2)^2} \Rightarrow -(x-2)^2 \geq 0 \Rightarrow x=2 \Rightarrow y=0$$

① ④

$$-x^2 + 4x - 1$$

$$\Rightarrow R = \{ \}$$

دقت!

صفحة آخر...

$$b) 2x^2 - 1x \Rightarrow$$

$$\frac{-b}{2a} = \frac{1}{4} \Rightarrow \frac{-\Delta}{4a} = -1$$

$$\Rightarrow [-2, +\infty) \checkmark$$

$$c) y = \log(x^3 - x + 1) \Rightarrow R = \mathbb{R} \checkmark$$

② ⑤

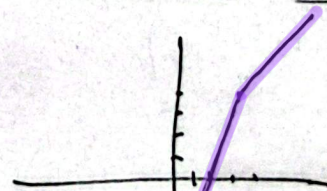
$$\Rightarrow x^3 - x + 1 > 0 \checkmark (x^3 - x + 1) \in \mathbb{R}$$

$$d) \log_2(x + \frac{1}{x}) \Rightarrow$$

$$x + \frac{1}{x} > 0 \Rightarrow x > 0 \Rightarrow x + \frac{1}{x} \geq 2$$

$$\Rightarrow \log_2([2, +\infty)) = \mathbb{R}$$

$$|2x-2| = |x-3|$$

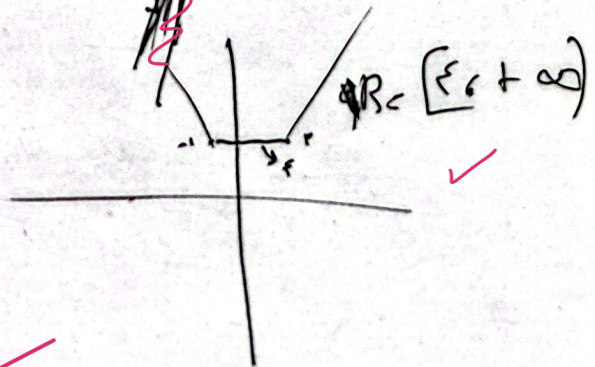


$$R = \mathbb{R}$$

③

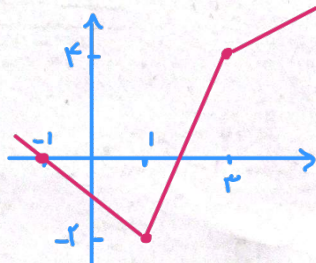
(1, 2.5)

$$y = |x-2| + |x-1|$$



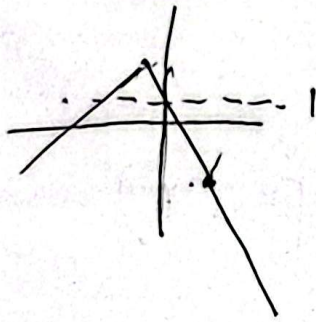
$$R = [1, +\infty)$$

$$y = \begin{cases} x+1 & x < 3 \\ 3x-5 & 1 \leq x \leq 3 \\ -x-1 & x < 1 \end{cases}$$



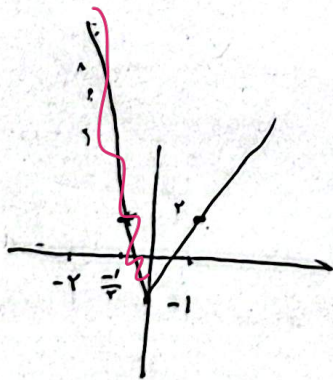
$$\Rightarrow R_y = [-2, +\infty)$$

الف)



(v)
(r)

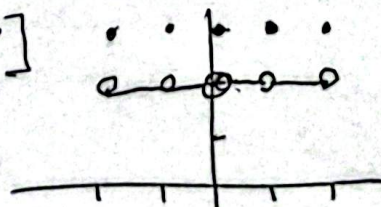
$$\begin{aligned}
 -x + y - yx - y &\leq 1 \\
 -x + y + yx + y &\leq 1 \\
 -yx &\leq 1 \Rightarrow x \geq -\frac{1}{y} \\
 x &\leq -\frac{1}{y} \\
 \Rightarrow R &= \left(-\frac{1}{y}, -\frac{1}{y} \right)
 \end{aligned}$$



(1)
(r)

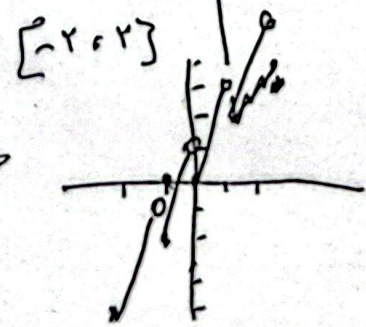
$$[-1, +\infty)$$

$$\begin{aligned}
 y + [x] + [-x] &\Rightarrow [-r, r] \\
 \Rightarrow R &= [r, r]
 \end{aligned}$$



(9)
(r)

$$\begin{aligned}
 x - [x] &\begin{cases} rx : x \in \mathbb{Z} \\ ry - [x] : x \notin \mathbb{Z} \end{cases} \Rightarrow
 \end{aligned}$$



$$[-r, +\infty)$$

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

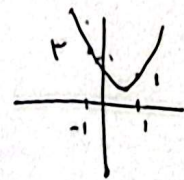
$$\Rightarrow \sin x = \frac{1}{2} \checkmark \Rightarrow \frac{\pi}{6}$$

(1)
(USA)

$$-1 \Rightarrow \frac{\pi}{2} \checkmark$$

$$1 \Rightarrow \pi$$

$$\Rightarrow \left[\frac{\pi}{6}, \pi \right]$$



$$\left(\frac{-b}{2a} = \frac{1}{2} \right) \sin^2 x = \frac{1}{4} x$$

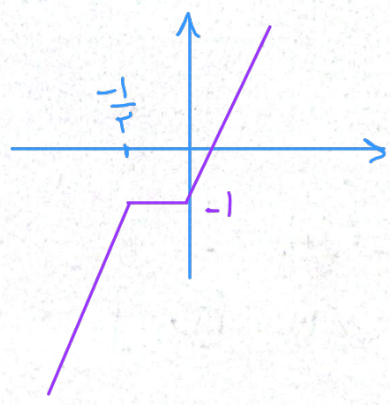
$$\Rightarrow \sin^2 x \begin{matrix} \rightarrow 0 & \rightarrow 1 \\ \rightarrow 1 & \rightarrow \pi \end{matrix}$$

$$[1, \pi]$$

$$\text{الف } \max \left| \begin{matrix} -\frac{b}{2a} = \frac{1}{2} \\ y = 3 \end{matrix} \right| \Rightarrow R_y = \sqrt{(-\infty, 3]} = [0, \sqrt{3}]$$

-K

$$y = \begin{cases} x-1 & x \geq 0 \\ -1 & -\frac{1}{r} < x < 0 \\ x+1 & x \leq -\frac{1}{r} \end{cases}$$



$$R_y = \mathbb{R}$$

-A