

علانی نوسری!

۱۹، ۷۵

پاسخنامه کلیدی شماره: ...

$$\frac{1}{x-1} = |x+1|$$

$$x > 1 \Rightarrow x^2 - x_2 + 1 = 1$$

$$x^2 - x_2 = 0 \quad x(2-x) = 0 \quad x = 2 \quad \checkmark$$

$$x < 1 \Rightarrow (x-1)(-x+1) = -x^2 + x_2 - 1 = 1 \Rightarrow x^2 - x_2 + 2 = 0 \quad \Delta < 0 \quad \text{فاصله شیب}$$

$$\left| \frac{x-1}{x} \right| < 2 \Rightarrow -2 < \frac{x-1}{x} < 2 \Rightarrow -2x < x-1 < 2x \quad \frac{1}{x} < 2 \quad \checkmark \quad \left[\frac{1}{2}, +\infty \right)$$

$$\left| \frac{x-1}{x+1} \right| > 1 \Rightarrow \frac{x-1}{x+1} < -1 \quad 0 < \frac{x-1-x_2-1}{x_2+1} \Rightarrow 0 < \frac{-x-2}{x_2+1} \quad \frac{-x-2}{-x-2} = (-x_2 - \frac{1}{x})$$

$$-1 > \frac{x-1}{x+1} \Rightarrow \frac{x-1+x_2+1}{x_2+1} > 0 \Rightarrow \frac{x_2-1}{x_2+1} > 0 \quad \frac{-\frac{1}{x}}{-1} = (-\frac{1}{x} > \frac{1}{x})$$

$$(-x_2 - \frac{1}{x}) \cup (-\frac{1}{x} > \frac{1}{x}) = (-x_2 - \frac{1}{x}) - \{-\frac{1}{x}\} \quad \checkmark$$

$$x^2 < |x+y| \Rightarrow \begin{cases} x > -y & x^2 < x+y & x^2 - x - y < 0 & (x-x_2)(x_2+y) < 0 \\ x < -y & x^2 < -x-y & x^2 + x + y < 0 & \frac{(x+y)(x_2+y)}{-x_2-y} < 0 \end{cases}$$

$$|x-x| < \beta$$

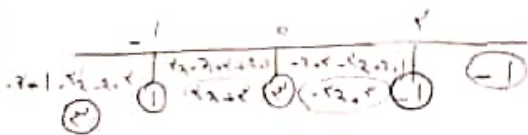
$$x = -\frac{x_2+y}{x} = \frac{1}{x}$$

$$|x - \frac{1}{x}| < \beta \Rightarrow x = \frac{1}{x} \quad \checkmark$$

$$y = |x+1| - |x_2| + |x-1|$$

$$y_{\max} = 2 \quad y_{\min} = -1$$

$$x-1 = 2 \quad \checkmark$$



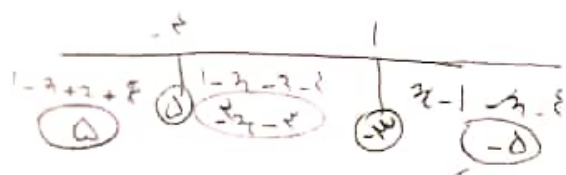
$$y = \left| \frac{1}{x} \right| - x \Rightarrow y' = \left| \frac{1}{x} \right| - x + 1$$

$$y' = \left| \frac{1}{x} \right| - 1 \quad y' = y \Rightarrow \left| \frac{1}{x} \right| - x = \left| \frac{1}{x} \right| - 1 \quad \checkmark$$

$$1 \neq -1 = 0, \text{ ...}$$

$$\begin{cases} 0 \leq x & \frac{1}{x} - 1 = \frac{1}{x} - x - 1 \neq x \quad \times \\ -1 \leq x \leq 0 & -\frac{1}{x} - 1 = \frac{1}{x} - x + 1 \Rightarrow x = 0 \quad \checkmark \\ x \leq -1 & -\frac{1}{x} - 1 = -\frac{1}{x} - x - 1 \neq -x \quad \times \end{cases}$$

الف) $f(x) = [|x| - |x+1|]$



$\Rightarrow R_f = [-2, -1, 0, 1, 2]$ (2, 1, 5)

ب) $\frac{1}{2} - [1 + \frac{1}{x}] = \frac{1}{2} - 1 - [\frac{1}{x}] = \begin{cases} x \in \mathbb{Z} = \frac{1}{x} - 1 \end{cases}$

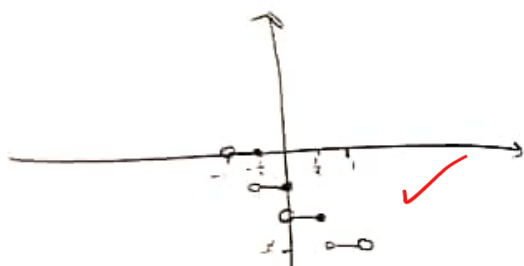
$-1 \leq \frac{1}{2} - 1 \leq 0$

$R_f = [-1, 0]$ وقت!

الف) $y = [-x_2] - 1$ (2, 1, 5)

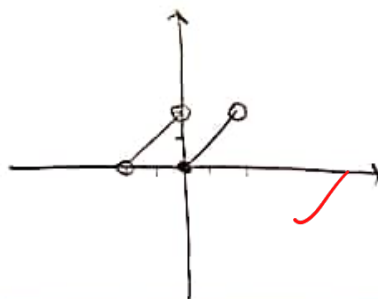
$x \in (-1, 1) \Rightarrow x_1(-1, 1)$

$\begin{cases} -1 < x_2 \leq -1 \Rightarrow [x_2] = -1 & [-x_2] = 1 \Rightarrow y = 0 \\ -1 < x_2 \leq 0 \Rightarrow [x_2] = 0 & [-x_2] = 0 \Rightarrow y = -1 \\ 0 < x_2 \leq 1 \Rightarrow [x_2] = 1 & [-x_2] = -1 \Rightarrow y = -2 \\ 1 < x_2 < 2 \Rightarrow [x_2] = 1 & [-x_2] = -2 \Rightarrow y = -3 \end{cases}$

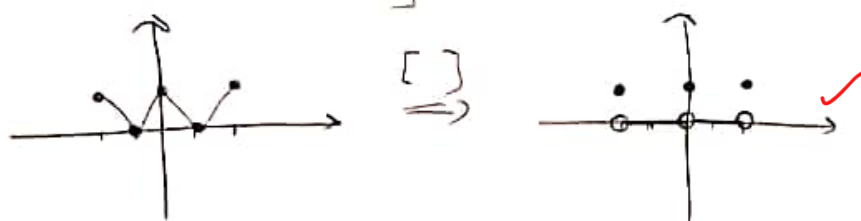


ب) $y = x - 2[\frac{x}{2}]$ (2, 1, 5)

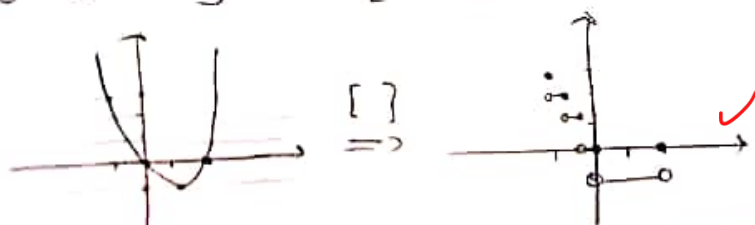
$\begin{cases} -1 < \frac{x}{2} < 0 \Rightarrow [\frac{x}{2}] = -1 \Rightarrow y = x + 2 & x \in (-2, 0) \\ 0 \leq \frac{x}{2} < 1 \Rightarrow [\frac{x}{2}] = 0 \Rightarrow y = x & x \in (0, 2) \end{cases}$



الف) $y = [|x| - 1]$ $x \in [-1, 1]$



ب) $y = [x^2 - x_2]$ $x \in [-1, 1]$



$$a + [b] = 8, 2$$

$$b = 2, 8$$

$$b = 2, 8 \checkmark$$

$$b - [a] = 2, 8$$

$$a = 9, 2$$

$$a = 1, 2 \checkmark$$

$$1, 2 + 2, 8 = \boxed{8, 4} \checkmark \quad \text{②}$$

$$2 - 9 = 2 \quad 2 + 9 = 8$$

$$22 = 4 \quad \boxed{2 = 2} \quad \boxed{9 = 1}$$

$$(1 + \sqrt{2})^4 + (1 - \sqrt{2})^4 = 19 \quad (1 + \sqrt{2})^4 = 19 - (1 - \sqrt{2})^4$$

$$(1 + \sqrt{2})^4 = 19V, \sim$$

$$-1 < 1 - \sqrt{2} < 1$$

$$\Rightarrow \boxed{(1 + \sqrt{2})^4} = 19V \checkmark$$

②