

$$\frac{1}{x+1} \cdot |x+1| \begin{cases} x \geq 1 \rightarrow \frac{1}{x+1} \cdot x+1 \rightarrow x^2 - 2x + 0 = x(2) \\ x < 1 \rightarrow \frac{1}{x+1} \cdot 1 \cdot x \rightarrow -x^2 + 2x - 2 = 0 \end{cases}$$

1 ریشه دارد: 2

ریشه دارد:  $\Delta < 0$

الف)  $\left| \frac{2x-1}{x} \right| < 2 \xrightarrow{20} \frac{4x^2 - 4x + 1}{x^2} < 4 \rightarrow 1 - 4x < 0$   
 $\rightarrow 4x > 1 \rightarrow \boxed{x > \frac{1}{4}} \quad (0/25, +\infty)$

ب)  $\left| \frac{x-2}{2x+1} \right| > 1 \rightarrow \frac{x^2 - 4x + 4}{4x^2 + 4x + 1} > 1 \rightarrow \frac{1}{3} - 3x^2 - 8x + 3 > 0$   
 $\xrightarrow{\text{بهرین علامت}} \frac{8 \pm 10}{-6} = -3, \frac{1}{3} \rightarrow \boxed{(-3, \frac{1}{3})}$

$$x^2 < |x+6| \begin{cases} x \geq -6 \rightarrow x^2 - x - 6 < 0 \xrightarrow{\text{بهرین علامت}} \frac{-2}{-1} \quad \frac{3}{1} \rightarrow (-2, 3) \\ x < -6 \rightarrow x^2 + 6x < 0 \rightarrow \Delta < 0 \rightarrow \text{ریشه ندارد} \end{cases}$$

$\rightarrow (-2, 3) \xrightarrow{\text{دولت}} 0/5 \xrightarrow{\text{بهرین علامت}} 2/5 \rightarrow |x - 0/5| < 2/5$   
 $\rightarrow \boxed{x \in 0/5}$

$$2 \cdot |x+1| - |2x| + |x-2| \begin{cases} x \geq 2 \rightarrow x+1-2x+x-2 = -1 \\ 2 > x \geq 0 \rightarrow x+1-2x-x+2, 3-2x \rightarrow (-1, 3] \\ x < 0 \rightarrow x+1+2x-x+2, 2x+3 \rightarrow (1, 3) \\ x < -1 \rightarrow -x+1+2x-x+2 = 1 \end{cases}$$

بهرین:  $[-1, 3]$  بازه:  $3$  بهترین:  $3$

$$2 \cdot \left| \frac{1}{2}x \right| - 2 \rightarrow x \geq x+4 \rightarrow 2 \Rightarrow x, 1 \rightarrow 2 \cdot \left| \frac{1}{2}x+2 \right| - 1 \quad \text{بهرین: } -3$$

$$\left| \frac{1}{2}x+2 \right| - 1 \cdot \left| \frac{1}{2}x \right| - 2 \begin{cases} x \geq 0 \rightarrow \frac{1}{2}x - \frac{1}{2}x - 2 = 1 \rightarrow -2, 1 \alpha 0 \\ 0 > x > -4 \rightarrow -\frac{1}{2}x - \frac{1}{2}x - 2 = 1 \rightarrow x = -3 \\ x \leq -4 \rightarrow -\frac{1}{2}x + \frac{1}{2}x + 2 = 1 \rightarrow 2, 1 \alpha \end{cases}$$

$$1) \frac{1}{x} - \left[ \frac{x+1}{x} \right] - \frac{1}{x} - 1 - \left[ \frac{1}{x} \right]$$

$$x \geq 1 \rightarrow [x-1, x-4] = -5$$

$$1 > x > -4 \rightarrow [-3, -2x] \rightarrow \{4, 3, 2, 1, 0, -1, -2, -3, -4\}$$

$$-4 > x \rightarrow [1-x, x+4] = 5$$

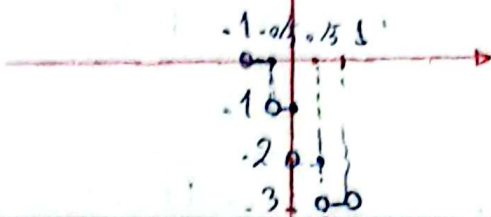
$$R_y = \{-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5\}$$

$$x > 0 \rightarrow \frac{1}{x} - 1$$

$$x < 0 \rightarrow \frac{1}{x} \quad R_y = [1, 0]$$

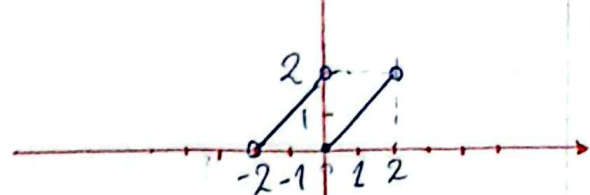
$$1) [-2x] - 1, y$$

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



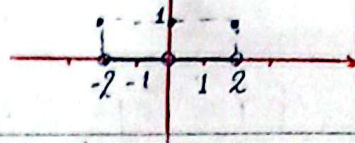
$$1) 2x - 2 \left[ \frac{x}{2} \right]$$

$$x \in (2, 2)$$



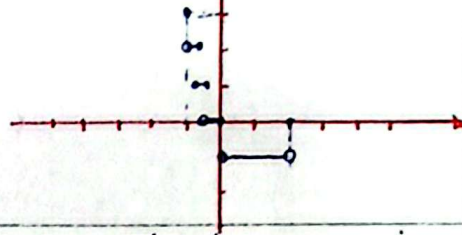
$$1) \frac{1}{x} - [1/x - 1]$$

$$x \in [-2, 2]$$



$$1) \frac{1}{x} - [x^2 - 2x]$$

$$x \in [-1, 2]$$



$$b - [a] - 2/4/a + [b] \sim 4/2 \rightarrow 0.4, b, 0.5/a, 0.2, a, 0.5$$

$$b, [b] + a - [a] \sim 6/6 \rightarrow 2b - 0/2 \sim 6/6$$

$$\rightarrow b \sim 3/4, a \sim 1/2 \rightarrow a + b \sim 4/6$$

$$(1 + \sqrt{2})^2 \sim 1 + 2 + 2\sqrt{2} \sim 3 + 2\sqrt{2} \sim (3 + 2\sqrt{2})^3 \sim$$

$$27 + 54\sqrt{2} + 72 + 8\sqrt{2} \sim 99 + 70\sqrt{2}$$

$$\sqrt{2} \sim 1/4 \rightarrow [99 + 70\sqrt{2}] \rightarrow 197$$