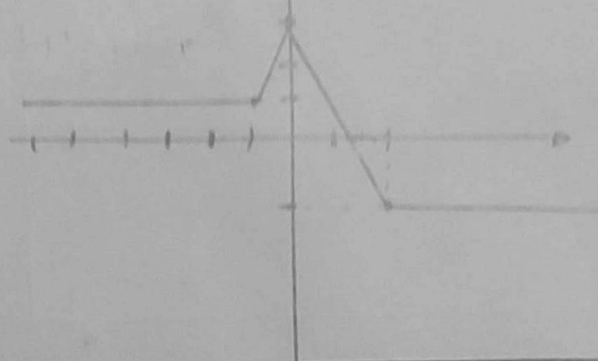


$$y = |x+1| - |x| + |x-2|$$

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

$$x = 5$$



کمر بین -1  
بیشتر 2

$$y = \left| \frac{1}{2}x \right| - 2$$

$$x > 0 \rightarrow \frac{1}{2}x - 2$$

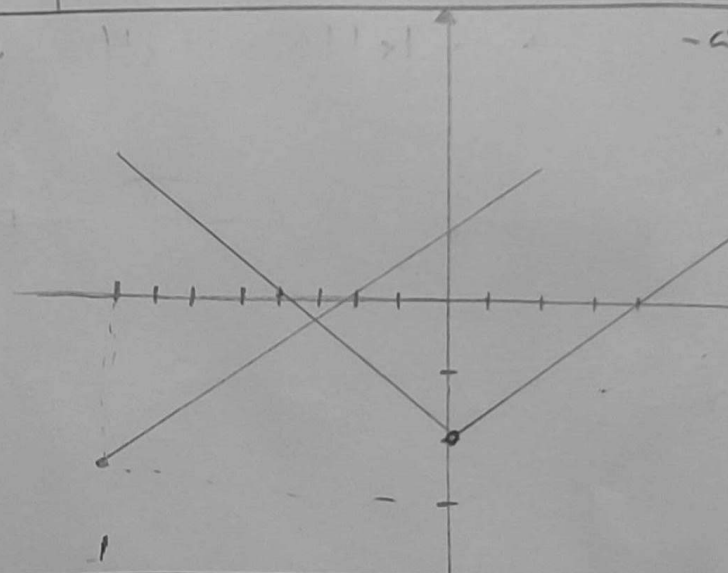
$$x < 0 \rightarrow -\frac{1}{2}x - 2$$

$$y = \left| \frac{1}{2}x + 1 \right| - 3$$

$$x > -1 \rightarrow \frac{1}{2}x + 1 - 3$$

$$x < -1 \rightarrow -\frac{1}{2}x - 1 - 3$$

$$x = -2 \text{ جواب}$$



$$f(x) = [1-x] - [x+5]$$

$$R = [2, 5]$$

$$x-1-x-5 = -6$$

$$x-1-x-5 = -6$$

$$1-x-x-5 = -6$$

$$1-x+x+5 = 6$$

$$1-x+x+5 = 6$$

$$f(x) = \frac{1}{x} - \left[ \frac{x+1}{x} \right] \Rightarrow \frac{1}{x} - \left[ 1 + \frac{1}{x} \right] \quad \frac{1}{x} = k$$

$$k = [1+k] \rightarrow k = [k] + 1 \quad \begin{aligned} \text{if } k = [k] \quad k \in \mathbb{Z} \rightarrow k - [k] = 0 \rightarrow f(x) = 0 \\ \text{if } k = [k] \quad k \notin \mathbb{Z} \rightarrow k - [k] = -1 \rightarrow f(x) = -1 \end{aligned}$$

$$R = \{1, 0\}$$

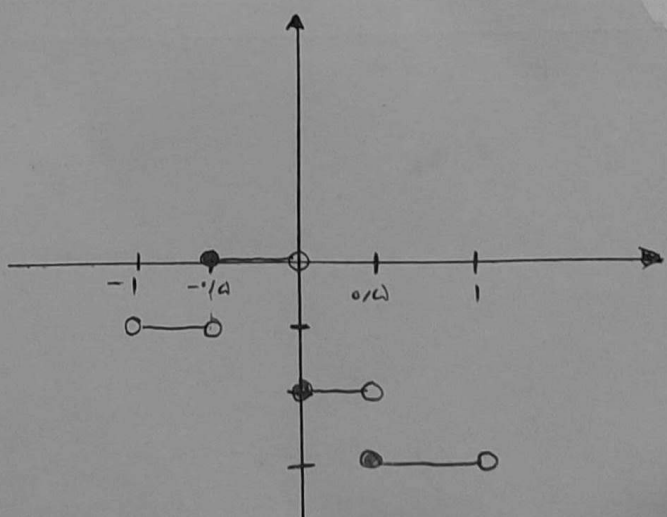
$$a) y = [-2x] - 1 \quad x \in (-1, 1)$$

$$-1 < x < 0 \quad [-2x] = 0 \rightarrow y = -1$$

$$-0.5 \leq x < 0 \quad [-2x] = 1 \rightarrow y = 0$$

$$0 \leq x < 0.5 \quad [-2x] = -1 \rightarrow y = -2$$

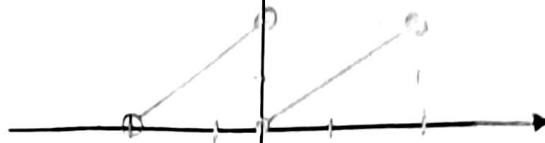
$$0.5 \leq x < 1 \quad [-2x] = -2 \rightarrow y = -3$$



$$\Rightarrow y = x - 1 \left[ \frac{x}{r} \right] \quad x \in (-1, 1)$$

$$-1 < x < 0 \xrightarrow{\left[ \frac{x}{r} \right] = -1} y = x + 1$$

$$0 \leq x < 1 \xrightarrow{\left[ \frac{x}{r} \right] = 0} y = x$$



$$\text{Sol) } y = [|x| - 1] \quad x = -1 \Rightarrow y = 1$$

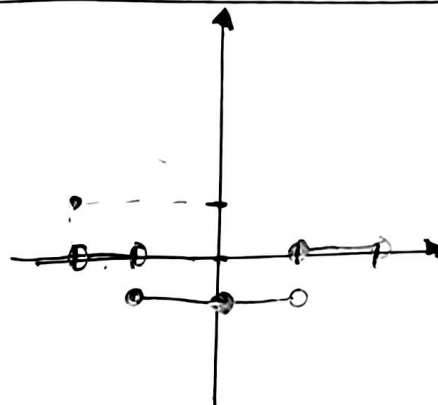
$$x = 1 \Rightarrow y = 1$$

$$-1 \leq x < -1 \xrightarrow{\quad} y = 0$$

$$-1 \leq x < 0 \xrightarrow{\quad} y = -1$$

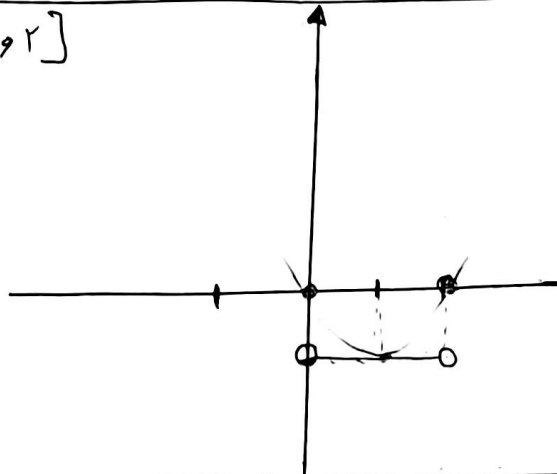
$$0 \leq x < 1 \xrightarrow{\quad} y = -1$$

$$1 \leq x < 2 \xrightarrow{\quad} y = 0$$



$$\Rightarrow y = [x^2 - 2x] \quad x \in [-1, 2]$$

$$\frac{y}{x} = 1 \quad 1 - 2 = -1$$



$$a + [b] = 1, 2$$

$$a = 0, 1, 2 \quad (a+b = 1, 2)$$

$$b - [a] = 1, 2$$

$$b = 0, 1, 2$$

$$0 \leq x + y \leq 1, 2 \Rightarrow x + y = 1$$

$$y + 0 \leq x \leq 1, 2 \Rightarrow y - x = 2$$

$$2y = 2 \Rightarrow y = 1 \Rightarrow x = 1$$

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

$$1 + 2\sqrt{2} = k$$

$$(r, k) (rk) r$$

$$rk + rk^2$$

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

$$(r + k)^2 + (k)^2 = 19 \wedge$$

$$1 + rk^2 + rk^2 + k^2 - k^2 = 19 \wedge \rightarrow rk^2 + rk + 1 = 19 \wedge$$

$$rk^2 + rk + 1 = 19 \wedge$$

$$rk^2 + rk - 18 = 0$$

$$\sqrt{19} \wedge \sqrt{19}$$

$$k = \frac{-r \pm \sqrt{r^2 + 19}}{r}$$

$$k = 1, \sqrt{2} \Rightarrow [1 + \sqrt{2}] = 2$$

$$\frac{1}{x-1} \leq |x-1|$$

$$x-1 = \frac{1}{x-1} \rightarrow x-1 - \frac{1}{x-1} = 0 \rightarrow \frac{x^2 - (x-1) - 1}{x-1} = 0 \rightarrow \frac{x^2 - x + 1 - 1}{x-1} = 0 \rightarrow \frac{x^2 - x}{x-1} = 0 \rightarrow x(x-1) = 0 \rightarrow x=0 \text{ or } x=1$$

$$x-1 = -\frac{1}{x-1} \rightarrow x-1 + \frac{1}{x-1} = 0 \rightarrow \frac{x^2 - (x-1) + 1}{x-1} = 0 \rightarrow \frac{x^2 - x + 1 + 1}{x-1} = 0 \rightarrow \frac{x^2 - x + 2}{x-1} = 0$$

$$1) \left| \frac{r_{n-1}}{x} \right| < r \rightarrow -r < \frac{r_{n-1}}{x} < r \rightarrow -r < \frac{r_{n-1}}{x} \rightarrow \frac{r_{n-1} + r x}{x} = \frac{r_{n-1}}{x} > 0$$

$$\frac{r_{n-1} - r x}{x} < 0 \rightarrow -\frac{1}{x} < 0 \rightarrow x > 0$$

$$I \cap II \rightarrow \left( \frac{1}{r}, +\infty \right)$$

$$2) \left| \frac{x-r}{r_{n+1}} \right| > 1 \rightarrow \frac{x-r}{r_{n+1}} > 1 \rightarrow \frac{x-r}{r_{n+1}} > 0 \rightarrow \frac{x-r}{r_{n+1}} > 0$$

$$\frac{x-r}{r_{n+1}} < -1 \rightarrow \frac{r_{n-1}}{r_{n+1}} < 0 \rightarrow \frac{r_{n-1}}{r_{n+1}} < 0$$

$$x^r < |x+\epsilon| \quad |x-\alpha| < B$$

$$-B < x - \alpha < B$$

$$x+\epsilon > x^r \rightarrow -x^r + x + \epsilon > 0$$

$$x+\epsilon < -x^r \rightarrow x^r + x + \epsilon < 0$$

$$(-r, r) \quad \alpha - B < x < B + \alpha$$

$$\alpha + B = r$$

$$\alpha - B = -r$$

$$\alpha = \frac{1}{r}$$