

$$f(x+1) + f(x+2) = x + f(x)$$

$$y = \sqrt{3-x^2}$$

(1)

$$\rightarrow x=1 \quad f(1) + f(2) = 1 + f(1) \Rightarrow f(2) = 1 \quad x_5 = -\frac{b}{2a} = 0 \quad y_5 = 1$$

$$R_f = [0, \sqrt{3}] \leftarrow \text{نطاق قيم } y \leftarrow (-\infty, 3] \leftarrow \text{نطاق } x$$

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

(2)

$$x_5 = -\frac{b}{2a} = \frac{+2}{2} = 1$$

$$y_5 = 1 - 2 = -1$$

$$R_f = [-1, +\infty) \quad x^2 - 2x \neq \lambda$$

$$x^2 - 2x - \lambda \neq 0$$

$$(x-\varepsilon)(x+2) \neq 0$$

$$x \neq \underbrace{\{-2, \varepsilon\}}_{a, b}$$

$$f\left(\frac{-2+\varepsilon}{2(-1)}\right) = f\left(\frac{2}{-2}\right) = f(-1)$$

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

$$\sqrt{x^2 + ax^2 + bx - 1} = \sqrt{(x-2)^2} = x-2 \quad \rightarrow [-4, 12]$$

(3)

$$x^2 - 4x^2 + 12x - 1$$

$$a = -4 \quad b = 12$$

$$\begin{cases} -4-2 = -6 \\ 12-2 = 10 \end{cases}$$

$$R_f = [-6, 10]$$

$$y_1 = \left(\frac{x+1}{1-x}\right)^{\frac{1}{2}}$$

$$\sqrt{\frac{x+1}{1-x}} \quad \rightarrow \begin{cases} x \neq 0 \\ x \neq +1 \end{cases}$$

 D_f

$$y_2 = \frac{ax^2 - 1}{x^2 + b}$$

$$f(\infty) = a \rightarrow a = 1$$

$$f(0) = -\frac{1}{b} \rightarrow -\frac{1}{b} = 1 \rightarrow b = -1$$

$$a+b = 1-1 = 0$$

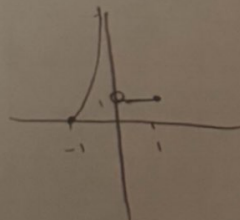
$$D_f = R_f \cup \{0\}$$

(4)

$$-1 \leq x < 0 \rightarrow [x] = -1 \rightarrow -1 + \frac{-1}{x} = -1 - \frac{1}{x}$$

$$0 < x < 1 \rightarrow 1 + 0 = 1$$

$$x = 0 \rightarrow \text{غير معرف}$$



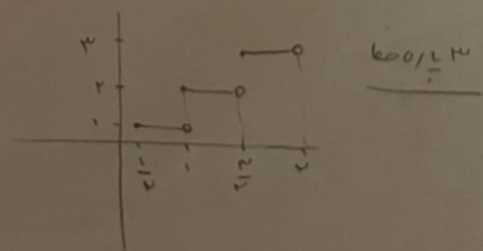
(5)

$$\frac{1}{2} \leq x < 1 \rightarrow [x] = 0$$

$$[x + \frac{1}{x}] = [\frac{1}{2} + \frac{1}{\frac{1}{2}}] = 1 \rightarrow f(x) = 0 + 1 = 1$$

$$1 \leq x < \frac{3}{2} \rightarrow [x] = 1 \rightarrow f(x) = x$$

$$\frac{3}{2} \leq x < 2 \rightarrow [x] = 1 \rightarrow f(x) = x$$



(6)

(سارا امینی زاد)

$$\left| \frac{x+1}{ax+k} \right| < 1 \quad \rightarrow \quad -1 < \frac{x+1}{ax+k} < 1 \quad \rightarrow \quad x+1 < ax+k \rightarrow x < \frac{k}{1-a}$$

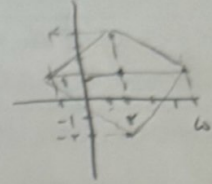
$$\rightarrow x+1 > -ax-k \rightarrow x > \frac{-k}{1+a}$$

$$\frac{-2}{1+a} < x < \frac{2}{1-a}$$

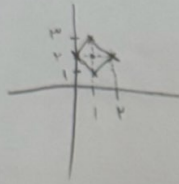
$$a-b = \frac{2}{1-a} - \frac{-2}{1+a} = \frac{2}{1-a} + \frac{2}{1+a} = \frac{2(1+a)}{1-a^2}$$

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

$$\begin{aligned} x-2 \geq 0 \quad y-1 \geq 0 &\rightarrow x \geq 2, y \geq 1 \rightarrow (x-2)+(y-1) = 0 \rightarrow y = 3-x \\ x-2 \geq 0 \quad y-1 < 0 &\rightarrow x \geq 2, y < 1 \rightarrow (x-2)-(y-1) = 3 \rightarrow y = x-2 \\ x-2 < 0 \quad y-1 \geq 0 &\rightarrow x < 2, y \geq 1 \rightarrow -x+2+y-1 = 3 \rightarrow y = x+2 \\ x-2 < 0 \quad y-1 < 0 &\rightarrow x < 2, y < 1 \rightarrow -x+2-y+1 = 3 \rightarrow y = -x \end{aligned}$$



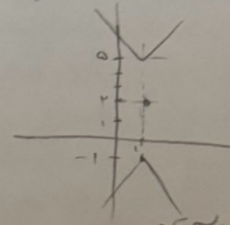
الف) $|x-1| + |y-2| = 1$



اول نقطه مرکزی را بدست آورده یک واحد به سمت بالا چپین
راست چپ رفته و لوزی را رسم می کنیم

ب) $|x-1| - |y-2| = -3$

$$\rightarrow |y-2| - |x-1| = 3$$



اول نقطه مرکزی را بدست می آوریم
و بعد ۳ واحد بالا و ۳ واحد پایین تر می رود و آن را رسم کرده

$$(3+a)x + b \rightarrow ax + b \geq 0$$

$$(3-a)x - b \rightarrow ax + b < 0$$

$$\begin{aligned} 3+a > 0 \quad 3-a > 0 \\ a > -3, \quad a < 3 \end{aligned}$$

$$-3 < a < 3$$

$$\begin{aligned} 3+a < 0 \quad 3-a < 0 \\ a < -3 \quad a > 3 \end{aligned} \quad \left. \begin{array}{l} \\ \\ \end{array} \right\} \text{غیر ممکن}$$