

$$f(x+1) + f(x+2) = 2x + f(2) \quad f = ax+b$$

$$a(x+1) + b + a(x+2) + b = 2x + 2a + b$$

$$2ax + a + a + 2b = 2x + 2a \rightarrow 2ax + b = 2x \rightarrow \boxed{b=0, a=1}$$

$$f(x) = x$$

$$y = \sqrt{f(x)-x^2} \rightarrow y = \sqrt{x-x^2} \begin{cases} x=0 \rightarrow 0 \\ x=1 \rightarrow 0 \\ x=0.5 \rightarrow 0.5 \end{cases} \rightarrow R_y = [0, 0.5]$$

$$(0, +\infty) - \{1\} \rightarrow f(x) = \frac{x^2 - 1}{x+1} \rightarrow \frac{x(x+1)(x-1)}{x+1} \begin{cases} x=1 \rightarrow y=1 \\ x=-1 \rightarrow y=1 \end{cases}$$

$$D_f = R - \{-1, 1\}$$

$$R_f: (-1, -\infty) - \{1\} \rightarrow C = -1 \quad f\left(\frac{1-x}{-x}\right) = f\left(\frac{x}{-x}\right) = f(-1)$$

$$\hookrightarrow y = x(x-1) \quad x^2 - x \rightarrow \text{graph} \rightarrow f(-1) = 2$$

$$y = ax+b \rightarrow y = \sqrt{x^2 + 2bx + b^2} - 1 \rightarrow (x-1)^2 = x^2 - 2x + 1 \rightarrow \boxed{a=-2, b=1}$$

$$y = x-1 \rightarrow D_y = [-1, 1] \rightarrow R_y = [-1, 1]$$

$$\frac{x+1}{1-x} > 0 \rightarrow \frac{x+1}{x-1} < 0 \rightarrow D_y = \text{graph} \quad (-1, 1)$$

$$\frac{ax^2+1}{x+b} > 0 \rightarrow \frac{x^2-1}{x-1} > 0 \rightarrow \text{graph}$$

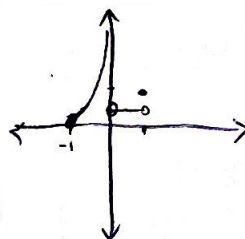
$$\frac{[x]}{x} + \frac{|x|}{x}$$

$$x=1 \rightarrow 2$$

$$0 < x < 1 \rightarrow \frac{x}{x} = 1$$

$$x=0 \rightarrow 0 \rightarrow \text{چون } x=0 \text{ تعریف نشده}$$

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



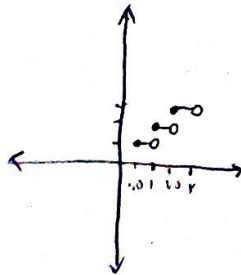
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$$10 \leq x < 2 \rightarrow 1 + 2 = 3$$

$$1 \leq x < 10 \rightarrow 1 + 1 = 2$$

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



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$$\left| \frac{x+1}{a} \right| \rightarrow -1 \leq \frac{x+1}{a} \leq 1$$

$$x+1 < a \rightarrow -2 < (a-1)x$$

$$x+1 < a \rightarrow -2 < (a-1)x$$

$$\frac{x+1}{a}$$

تابع به صورت

$$\frac{1}{a}x$$

تابع خطی است

$$\left| \frac{x+1}{a} \right|$$

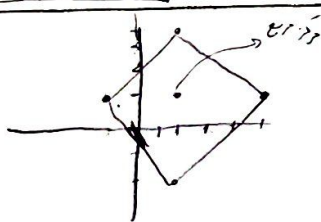
تابع

$$x = -2$$

$$(b, +\infty) \rightarrow (-2, +\infty) \rightarrow \text{تابع به صورت}$$

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

$$1 - (-2) = 3$$

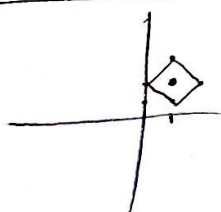


$$x > 2, y < 1 \rightarrow x - 2 - y + 1 = 3 \rightarrow y = x - 4$$

$$x > 2, y > 1 \rightarrow x - 2 + y - 1 = 3 \rightarrow y = -x + 6$$

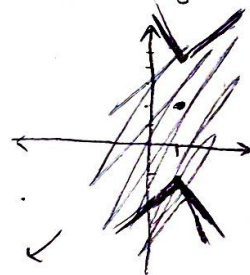
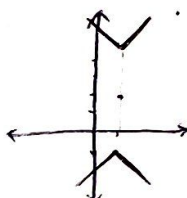
$$x < 2, y < 1 \rightarrow 2 - x - y + 1 = 3 \rightarrow y = -x$$

$$x < 2, y > 1 \rightarrow 2 - x + y - 1 = 3 \rightarrow y = x + 2$$



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

$$|x-1| + |y-2| = 3$$



$$y \cdot r x + a x + b \rightarrow y \cdot (r+a) x + b$$

$$a x + b > 0$$

$$y \cdot r x - a x - b \rightarrow y \cdot (r-a) x - b$$

$$a x + b < 0$$

$$a + r, r - a \rightarrow \text{نسبت}$$

$$(r+a)$$

$$(r-a)$$

$$(r-a) > 0 \rightarrow -\frac{1}{r} + \frac{1}{r} =$$

$$-2 < a < 2$$