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مسائل / تكليف

$$f(x+1) + f(x+2) = 3x + f(3) \quad y = \sqrt{f(x) - x^2} \quad (1)$$

$$\hookrightarrow x=1 \rightarrow f(2) + f(3) = 3 + f(3) \rightarrow f(2) = 3 \quad (2)$$

$$f(x) = ax + b \rightarrow 2ax + a + b + ax + 2a + b = 3x + 3$$

$$3ax + 3a + 2b = 3x + 3 \rightarrow a=1, b=0 \rightarrow f(x) = x$$

$$y = \sqrt{-x^2 + x} \rightarrow \frac{-b}{2a} = \frac{-1}{-2} = \frac{1}{2} \rightarrow y = \frac{1}{2}$$

$$R_f = (\sqrt{-\infty}, \sqrt{\frac{1}{4}}] = (0, \frac{1}{2}] \quad \checkmark$$

$$f(x) = \frac{x^2 - 2x}{x+2} \quad D_f = \mathbb{R} - \{a, b\} \quad R_f = [c, +\infty) - \{1\} \quad (3)$$

$$f(x) = \frac{x(x-2)(x+2)}{x(x+2)} = x^2 - 2x \rightarrow \begin{array}{c} \text{Graph of } y = x^2 - 2x \\ \text{Vertex at } (1, -1) \\ \text{x-intercepts at } 0 \text{ and } 2 \end{array} \rightarrow x \neq -2, y \neq 1$$

$$y \neq 1 \rightarrow \begin{array}{l} x \neq -2 \\ x \neq 2 \end{array} \Rightarrow D_f = \mathbb{R} - \{-2, 2\} \\ R_f = [-1, +\infty) - \{1\}$$

$$f\left(\frac{a+b}{2c}\right) = f\left(\frac{-2+2}{2(-1)}\right) = f(-1) = \frac{-1+2}{-1+2} = 1 \quad \checkmark$$

$$y = \sqrt[3]{x^3 + ax^2 + bx - 1} \quad (4)$$

$$(x-1)^3 = x^3 - 3x^2 + 3x - 1 \Rightarrow a = -3, b = 3$$

$$y = \sqrt[3]{(x-1)^3} = x-1 \quad \checkmark$$

$$D_f = [-3, 3] \rightarrow -3 \leq x \leq 3 \xrightarrow{-1} -1 \leq x-1 \leq 2 \rightarrow R_f = [-1, 2] \quad \checkmark$$

$$a+b=?$$

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

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

$$\hookrightarrow \log y_1 = \frac{1}{\omega} \log \frac{x+1}{1-x}$$

$$y=1 \iff x=0 \text{ (1;1)}$$

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

$$\frac{x+1}{1-x} \neq 1 \rightarrow x+1 \neq 1-x \rightarrow 2x \neq 0 \rightarrow x \neq 0$$

$$Df = (-1, 1) - \{0\}$$

صفر است
از دامنه حذف؟

$$x^k = \frac{yb+1}{y-a}$$

$$x = \sqrt{\frac{yb+1}{a-y}}$$

$$\frac{1}{b} < a$$

$$\rightarrow a=1, b=1 \rightarrow y = \frac{x^k-1}{x^k+1} \rightarrow x^k-1=0 \rightarrow x=\pm 1 \rightarrow y=0 \checkmark$$

$$\rightarrow a=-1, b=-1 \rightarrow y = \frac{-x^k-1}{x^k-1} \rightarrow -x^k-1=0 \rightarrow y \neq 0 \times$$

$$a+b=2 \checkmark$$

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

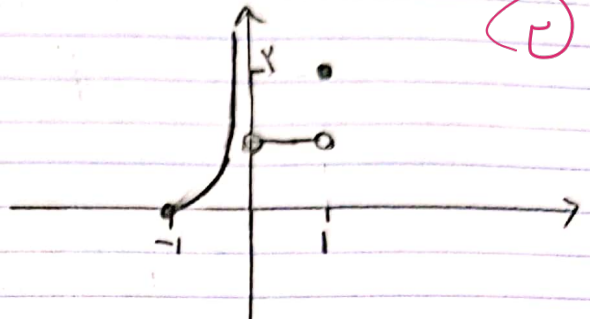
$$[-1, 1]$$

(5)

$$[-1, 0) \rightarrow [x] = -1 \rightarrow y = \frac{-1}{-1} - 1$$

$$[0, 1) \rightarrow [x] = 0 \rightarrow y = 1$$

$$x=1 \rightarrow y=2$$



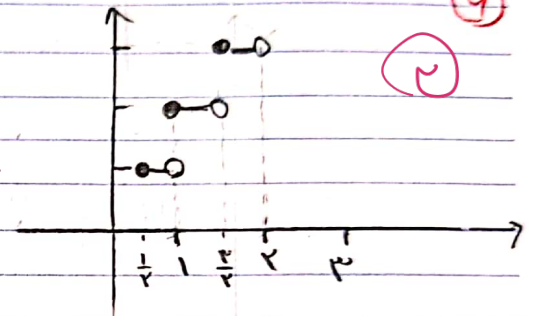
(2)

$$y = [x] + [x + \frac{1}{x}] \quad [\frac{1}{x}, 2]$$

$$[\frac{1}{x}, 1) \rightarrow [x] = 0, [x + \frac{1}{x}] = 1 \rightarrow y = 1$$

$$[1, \frac{x}{x}) \rightarrow [x] = 1 \rightarrow [x + \frac{1}{x}] = 1 \rightarrow y = 2$$

$$[\frac{x}{x}, 2) \rightarrow [x] = 1 \rightarrow [x + \frac{1}{x}] = 2 \rightarrow y = 3$$



(9)

(2)

$$\left| \frac{x+1}{ax+3} \right| < 1 \rightarrow D_f = (b, +\infty) \quad a-b=?$$

(11)

$$I) \frac{b+1}{ab+3} = 1 \rightarrow b+1 = ab+3 \rightarrow b = \frac{2}{1-a}$$

$$II) \frac{-b-1}{ab+3} = 1 \rightarrow -b-1 = ab+3 \rightarrow b = \frac{-4}{a+1}$$

$$\Rightarrow \frac{2}{1-a} = \frac{-4}{a+1} \rightarrow 2a+2 = -4+4a \rightarrow 2a=6 \rightarrow a=3 \rightarrow b=-1$$

$$\Rightarrow a-b = 3+1 = 4$$

$$|c| < |d| \rightarrow (c-d)(c+d) < 0 \quad (a_n + n + 2)(x - a_n - 2) < 0$$

$$a < 1 \rightarrow (2n+1)(-2) < 0 \quad n > -2 \rightarrow b < -2 \checkmark$$

$$a < -1 \rightarrow 4(2n-2) < 0 \rightarrow n < 1 \quad \text{نقص}$$

$$a-b=4$$

پایه نامده! معادله کن!

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

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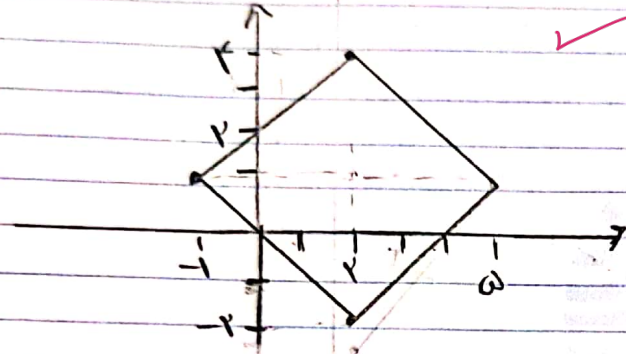
$$y \geq 1 \rightarrow y = 4 - |x-2| \rightarrow x \geq 2 \rightarrow y = 4 - x$$

$$\rightarrow x < 2 \rightarrow y = 2 + x$$

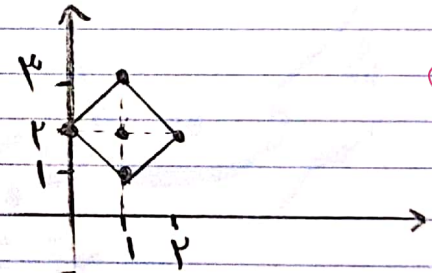
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$$y < 1 \rightarrow y = |x-2| - 2 \rightarrow x \geq 2 \rightarrow y = x - 2$$

$$\rightarrow x < 2 \rightarrow y = -x$$



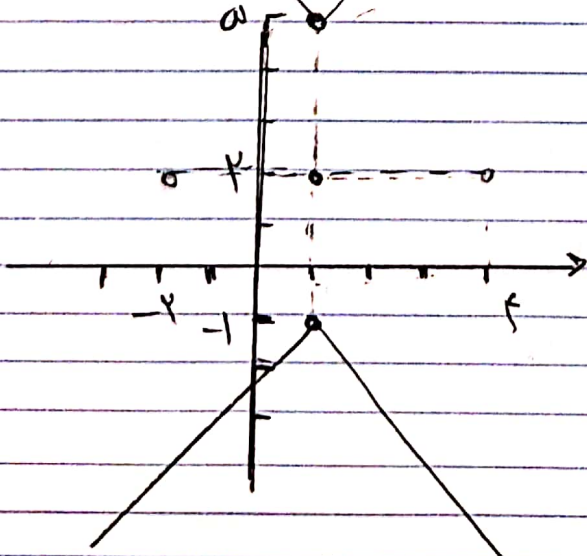
۱) $|x-1| + |y-2| = 1$ (الف)
 مرکز مربع $\begin{vmatrix} 1 \\ 2 \end{vmatrix}$
 نصف قطر = ۱
 بالا و نیچے پاسین و نیچے چپ و نیچے راست می روم



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۳) $|x-1| - |y-2| = -4 \rightarrow |y-2| + |x-1| = 4$ (ب)
 مرکز مربع $\begin{vmatrix} 1 \\ 2 \end{vmatrix}$
 نصف قطر = ۲
 شکل را از دو گوشه کی بالا و پاسین استاندارد می دهیم



$$y = \begin{cases} 3x + |ax + b| \end{cases} \quad R_f = \mathbb{R}$$

①

$$\left\{ \begin{array}{l} 3x + ax + b = (3+a)x + b \\ 3x - ax - b = (3-a)x - b \end{array} \right\} \rightarrow \frac{-b}{a} = \text{نسبت}$$

①

$$\frac{-b}{a} \quad (a+3)(3-a) < 0 \quad -5 < a < 5 \quad \text{نسبت خفایا باید مع علامت یابد}$$

$$\begin{array}{c|c} (3-a)x - b & (3+a)x + b \end{array} \quad \left\{ \begin{array}{l} \rightarrow 3+a > 0 \rightarrow a > -3 \\ \rightarrow 3-a > 0 \rightarrow a < 3 \end{array} \right.$$

$$\frac{-b}{a}$$

$$\begin{array}{c|c} (3+a)x + b & (3-a)x - b \end{array} \quad \left\{ \begin{array}{l} \rightarrow 3+a < 0 \rightarrow a < -3 \\ \rightarrow 3-a < 0 \rightarrow a > 3 \end{array} \right.$$

$$\cap \rightarrow \mathbb{R} - \{-3, 3\}$$