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7 ریکتا (مستقیم) / دوازدهم دبیرستان

نیمه آذر

تالیف کار

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$$9 \quad f(2x+1) + f(x+5) = 2x + f(7) \Rightarrow y = \sqrt{f(x) - 2x^2} \xrightarrow{Rf} \textcircled{1}$$

$$10 \quad 2x+1 = 7 \Rightarrow x = 3 \Rightarrow f(7) + f(7) = 7 + f(7) \Rightarrow f(7) = 7$$

$$11 \quad f(x) = ax + b \Rightarrow 2ax + a + b + ax + 2a + b = 2x + 7$$

$$12 \rightarrow 3ax + 3a + 2b = 2x + 7 \rightarrow a = 1 \text{ و } b = 0$$

$$13 \quad f(x) = x \Rightarrow y = \sqrt{x - x^2} \rightarrow x - x^2 \rightarrow -\frac{b}{2a} = -\frac{1}{2} = \frac{1}{2} = x'_{\text{نقطه}}$$

$$14 \Rightarrow \frac{1}{2} - \frac{1}{2} = \frac{1}{2} = y'_{\text{نقطه}} \xrightarrow{Rf} (-\infty, \frac{1}{2}] \xrightarrow{\text{دامنه}} [0, \frac{1}{2}] \in Rf$$

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$$16 \quad f(x) = x^2 - \varepsilon x \xrightarrow{Df} \mathbb{R} - \{a, b\} \text{ و } Rf \rightarrow [c, +\infty) - \{1\} \textcircled{2}$$

$$17 \quad f\left(\frac{a+b}{2}\right) = ? \quad \text{نقطه میانه - میانگین دو عدد حقیقی}$$

$$18 \quad \frac{x^2 - \varepsilon x}{x+5} = \frac{x(x - \varepsilon)}{x+5} = x'(x-5) \rightarrow x^2 - 20x = 1 \rightarrow x^2 - 20x - 1 = 0$$

$$19 \quad (x - \varepsilon)(x + 5) = 0 \rightarrow x = \varepsilon \text{ و } x = -5 \Rightarrow Df = \mathbb{R} - \{\varepsilon, -5\}$$

$$f(x) = x^2 - 10x \xrightarrow{Rf} \left[-\frac{1}{2\varepsilon}, +\infty\right) \rightarrow \left[-\frac{1}{2\varepsilon}, +\infty\right) - \{1\} \in Rf$$

$$21 \quad f\left(\frac{a+b}{2}\right) = f\left(\frac{\varepsilon - 5}{2}\right) = f(-1) \Rightarrow (-1)^2 - 10(-1) = 11$$



Genobar

$$y = \sqrt{x^2 + ax^2 + bx - 1} \xrightarrow{Df} [a, b] \xrightarrow{Rf} ? \quad (15)$$

$$y = \sqrt{(x-2)^2} = \sqrt{x^2 - 4x^2 + 12x^2 - 1} = x - 2 \rightarrow a = -7, b = 15$$

$$-7 \leq x \leq 15 \xrightarrow{-2} -1 \leq x-2 \leq 10 \rightarrow \{Rf \in [-1, 10]\} \quad (16)$$

$$y_1 = \left(\frac{x+1}{1-x}\right)^{\frac{1}{a}} \text{ و } y_2 = \left(\frac{ax^2-1}{x^2+b}\right) \Rightarrow Df_1 = Rf_2 \quad (17)$$

$$a+b=?$$

$$Df \Rightarrow \log_b^a = c \rightarrow b^c = a \Rightarrow a > 0, b > 0, b \neq 1$$

$$\left\{ \begin{array}{l} \text{I} \quad \frac{x+1}{1-x} > 0 \rightarrow \frac{-1}{-1} \frac{1}{1-x} \Rightarrow [-1, 1) \cap \Rightarrow [-1, 1) - \{0\} \\ \text{II} \quad \frac{x+1}{1-x} \neq 1 \rightarrow x+1 \neq 1-x \rightarrow x \neq 0 \end{array} \right.$$

$$Rf \Rightarrow yx^2 + yb = ax^2 - 1 \Rightarrow x^2 = \frac{-yb-1}{y-a} \Rightarrow x = \pm \sqrt{\frac{-yb-1}{a-y}}$$

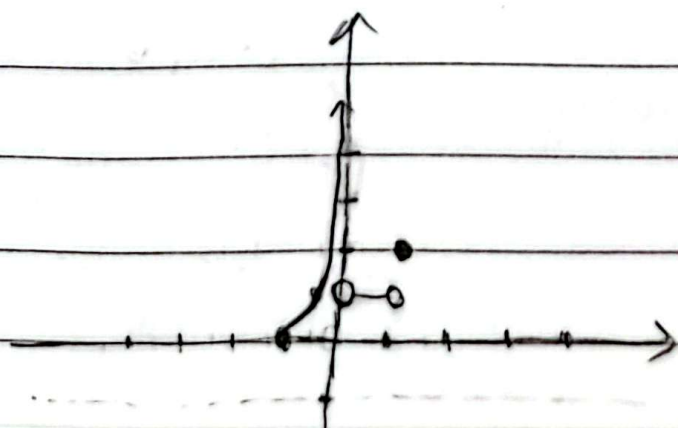
$$\Rightarrow \frac{-yb-1}{y-a} \geq 0 \rightarrow \frac{-1}{1} \frac{1}{1-x} \rightarrow \text{این جا ۲ حالت می آید} \quad (18)$$

$$1) \Rightarrow a=1, b=-1 \rightarrow y = \frac{x^2-1}{x^2-1} \rightarrow \text{در اینجا } y=0 \text{ می شود} \quad (19)$$

$$2) \Rightarrow a=-1, b=1 \rightarrow y = \frac{-x^2-1}{x^2-1} \rightarrow 0 \rightarrow a+b = -1+1 = 0 \quad (20)$$

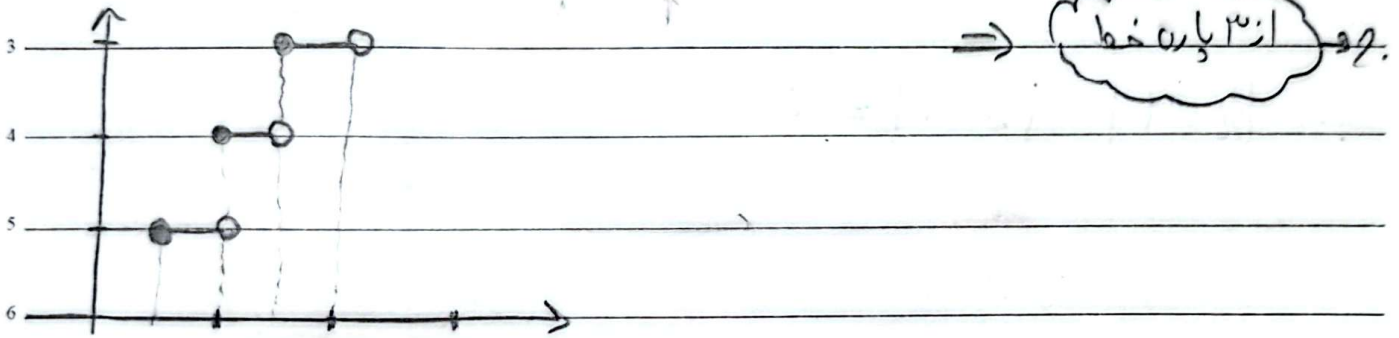
$$y = \left\lfloor \frac{x}{2} \right\rfloor + \left\lfloor \frac{|x|}{2} \right\rfloor \xrightarrow{[-1, 1]} x \in [-1, 0) \rightarrow y = -\frac{1}{2} - 1 \quad (21)$$

$$x \in (0, 1) \rightarrow y = 0 + 1 = 1 / x \in \{1\} \rightarrow y = 2 \quad (22)$$



$$y = [x] + \left[x + \frac{1}{r}\right] \quad \left[\frac{1}{r}, 2\right) \rightarrow x \in \left[\frac{1}{r}, 1\right) \rightarrow 0 + 1 = 1 \quad (4)$$

$$x \in \left[-1, \frac{r}{r}\right) \rightarrow 1 + 1 = 2 \quad / \quad x \in \left[\frac{r}{r}, 2\right) \rightarrow 1 + 2 = 3$$



$$\left| \frac{x+1}{ax+r} \right| < 1 \rightarrow (b, +\infty), \quad a-b=? \quad (5)$$

این در این سوال گفته یعنی سر بازه b است و باز است پس اگر $x=b$:

$$\left| \frac{b+1}{ab+r} \right| = 1 \Rightarrow \text{I} \quad \frac{b+1}{ab+r} = 1 \rightarrow b+1 = ab+r$$

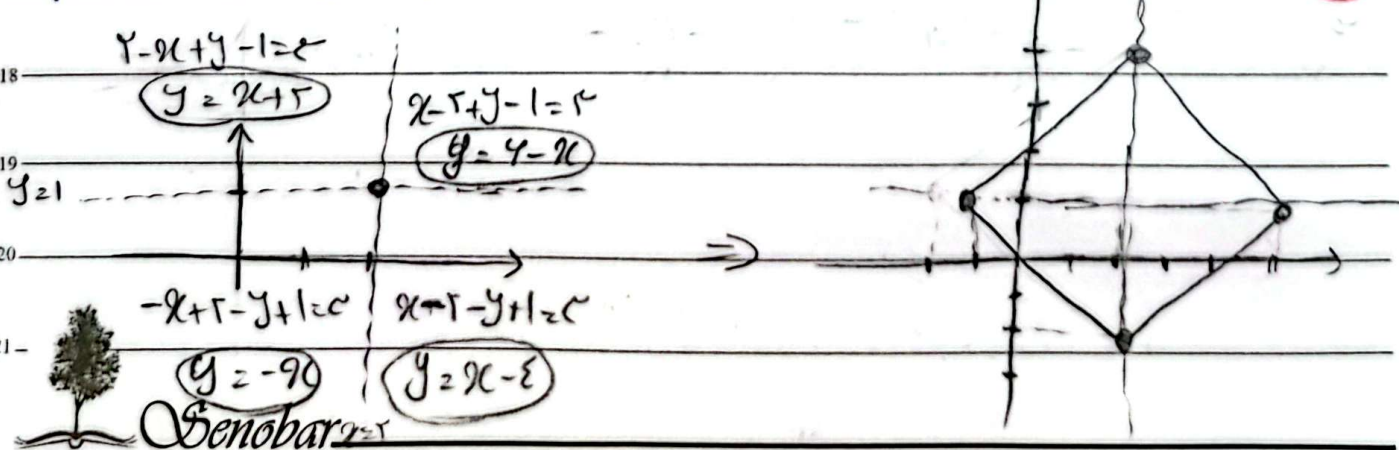
$$\Rightarrow \boxed{b(1-a) = r} \quad \text{و} \quad \text{II} \quad \frac{b+1}{ab+r} = -1 \rightarrow b+1 = -ab-r$$

$$\Rightarrow \boxed{b(a+1) = -r}$$

$$\Rightarrow \frac{b(-r)}{a+1} = \frac{r}{1-a} \Rightarrow \varepsilon a - \varepsilon = ra + r \rightarrow ra = \varepsilon \rightarrow \boxed{a=r}$$

$$\Rightarrow \frac{b(-r)}{\varepsilon} = -1 \Rightarrow a-b = r - (-1) = \boxed{\varepsilon} \rightarrow ?$$

$$|x-2| + |y-1| = 3 \quad (6)$$



الف $|x-1| + |y-2| = 1$

۱ مرتبه
 $\rightarrow$

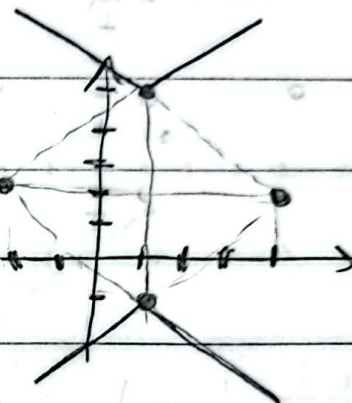


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ب $|x-1| - |y-2| = -2$

۱ مرتبه
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$$\rightarrow |y-2| - |x-1| = 2$$



$$y = 3x + |ax + b| \quad \mathbb{R}^+ \rightarrow \mathbb{R}$$

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

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$$(3-a)x - b \quad | \quad (4a)x + b$$

دایره حالت باید در نظر بگیریم که ۲ سبب با صراحت یا صراحت - اند

$$+ \text{ صراحت } \Rightarrow \begin{cases} 3+a > 0 \rightarrow a > -3 \\ 3-a > 0 \rightarrow 3 > a \end{cases} \Rightarrow (-3, 3) \in \mathbb{R}$$

$$- \text{ صراحت } \Rightarrow \begin{cases} 3+a < 0 \rightarrow a < -3 \\ 3-a < 0 \rightarrow 3 < a \end{cases} \Rightarrow (-\infty, -3) \cup (3, +\infty) \in \mathbb{R}$$

$$\Rightarrow \mathbb{R} - \{-3, 3\}$$

