

$$f(x+1) + f(x+2) = 3x + f(3) \quad f: a \rightarrow b$$

$$\hookrightarrow x+1 + x+2 = 3x + 3 \rightarrow 2x+3 = 3x+3 \rightarrow x=0$$

$$f: x \rightarrow y = \sqrt{x-x^2} \rightarrow \text{BRF} = \left[-\frac{1}{2}, \frac{1}{2}\right], \left[0, \frac{1}{2}\right]$$

$$\text{چون } x = -\frac{1}{2} \rightarrow y = \frac{1}{2}$$

$$f(x) = \frac{x^3 - 8x}{x+2} \rightarrow \frac{x(x^2-8)}{x+2} = \frac{x(x-2)(x+2)}{x+2} \rightarrow y = x^2 - 2x$$

از آنجایی که دامنه شامل ۲ عدد است
در دو نقطه قابل میل یک عدد است
یا ۲ عدد برابر یا ۴ طاق برابر یک عدد است. $\leftarrow$ در ۴ عدد هم برابر دارند

$$x_1 = \frac{2}{2} = 1 \rightarrow y_1 = -1 \rightarrow R_f = [-1, \infty) - f(-2)$$

$$\frac{a}{-2} + \frac{b}{2} = f \rightarrow b = f, a = -2, c = -1 \rightarrow f\left(\frac{a+b}{2}\right) = f(-1) = 3$$

$$y = \sqrt[3]{x^3 + ax^2 + bx - 1} \rightarrow \text{تابع قطعی} \rightarrow y = \sqrt[3]{(x-2)^3 - 2x - 2}$$

$$\rightarrow \begin{matrix} a = -4 \\ b = 12 \end{matrix} \rightarrow P_f = [-4, 12] \rightarrow R_f = [f(-4), f(12)]$$

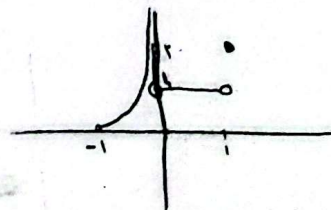
$$\rightarrow \begin{matrix} f(-4) = -1 \\ f(12) = 10 \end{matrix} \rightarrow R_f = [-1, 10]$$

$$y_1 = \left(\frac{x+1}{1-x}\right)^{\frac{1}{2}} = \sqrt{\frac{x+1}{1-x}} \geq 0 \rightarrow \frac{-1}{-1+b} \rightarrow -1 \leq x < 1$$

$$y = \frac{ax^2 - 1}{x^2 + b} \rightarrow \begin{matrix} x^2 = +\infty \rightarrow y = a \\ x^2 = 0 \rightarrow y = -\frac{1}{b} \end{matrix} \rightarrow \left[-\frac{1}{b}, a\right] \text{ Rf}$$

$$\frac{b=1}{a=1} \rightarrow a+b=2$$

$$y = \frac{[a]}{x} + \frac{[a]}{x} \quad \begin{matrix} -1 < x < 0 \rightarrow y = \frac{-1}{x} + \frac{-x}{x} = -\frac{1}{x} - 1 \\ 0 < x < 1 \rightarrow y < 1 \\ x = 1 \rightarrow y = 2 \end{matrix}$$

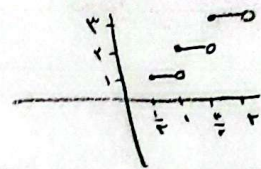


$$y = [a] + \left[a + \frac{1}{r}\right]$$

$$\frac{1}{r} < a < 1 \rightarrow y = 1$$

$$1 < a < 1.5 \rightarrow y = 2$$

$$1.5 < a < 2 \rightarrow y = 3$$



۳ یاره خط

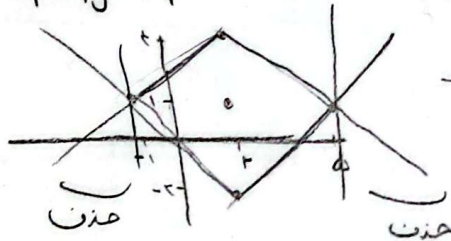
$$\left| \frac{a+1}{a+r} \right| < 1 \xrightarrow{\text{تذکره}} \frac{(a+1)^2}{(a+r)^2} < 1 \quad \text{یا} \quad (a+1)^2 < (a+r)^2$$

$$\rightarrow (1-a^2)r^2 + (r-a)a - 1 < 0 \quad \text{جواب (b+r)} \quad 1-a^2 < 0 \rightarrow a^2 > 1 \rightarrow a > 1$$

$$1-a^2 < 0 \rightarrow a^2 > 1 \rightarrow a > 1 \quad \text{یا} \quad a < -1$$

متر = $a+b$

$$|a-2| + |y-1| \leq 3$$



$$a > 2 \rightarrow |y-1| \leq 3-a \rightarrow y-1 \leq 3-a \rightarrow y \leq 4-a$$

$$\rightarrow y \geq 4-a$$

$$y \geq 4-a$$

$$a \leq 2 \rightarrow |y-1| \leq a+1 \rightarrow y-1 \leq a+1 \rightarrow y \leq a+2$$

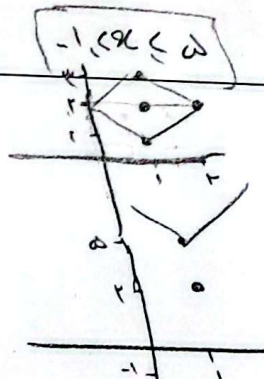
$$\rightarrow y \geq -a$$

$$a+1 > 0 \rightarrow a > -1$$

$$\text{این} \quad |a-1| + |y-2| = 1$$

$$\hookrightarrow |a-1| - |y-2| \leq -1$$

$$x-1 \rightarrow |y-2| - |a-1| \leq 1$$



$$y \geq 3a + |a+b|$$

متر = $a+b$

$$(3+a) > 0 \rightarrow a > -3$$

$$(3-a) > 0 \rightarrow 3 > a$$

$$\rightarrow -3 < a < 3$$

$$3+a < 0 \rightarrow a < -3$$

$$3-a < 0 \rightarrow 3 < a \rightarrow a$$

متر = $a+b$