

$$f(rx+1) + f(x+r) = rx + f(r) \quad \left\{ \begin{array}{l} rax + r + b + ax + r + b = rx + r + b \\ rax + b = rx \Rightarrow a=1, b=0 \end{array} \right.$$

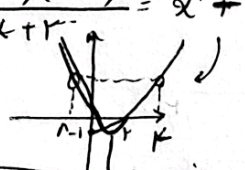
$$f(x) = ax + b \rightarrow x$$

$$\sqrt{f(x) - x^r} = \sqrt{x - x^r} \quad \left\{ R_f \in \left[0, \frac{1}{r}\right] \right.$$

$\hookrightarrow \frac{1}{r} \begin{array}{c} \nearrow \\ \searrow \end{array}$

$$f(x) = \frac{x(x-r)(x+r)}{x+r} = x^r + rx \quad \left\{ D_f = R - \{-r, r\} \right.$$

$\downarrow \quad \downarrow$
a b



$\hookrightarrow \min = -1 = 0$

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

$$\sqrt[r]{x^r + ax^r + bx - 1} \rightarrow \sqrt[r]{(cx+d)^r} \rightarrow \text{تابع خطی} \rightarrow x - r$$

$$\hookrightarrow x^r + ax^r + bx - 1 = (cx+d)^r \Rightarrow d = -r \text{ و } c = 1$$

$$x^r - 4x^r + 12x - 1 \rightarrow a = -4 \text{ و } b = 12 \rightarrow D_f \in [-4, 12]$$

$$g_1 = \sqrt{\frac{x+1}{1-x}} \rightarrow D_{g_1} \in (-1, 1)$$

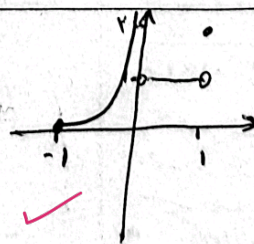
$$g_r = \frac{ax^r - 1}{x^r + b} \rightarrow R_{g_r} \in (-1, 1)$$

$$\left\{ \begin{array}{l} \hookrightarrow x^r = \infty \rightarrow g_r = a \\ \hookrightarrow x^r = 0 \rightarrow g_r = -\frac{1}{b} \end{array} \right. \quad \left\{ \begin{array}{l} a = b = 1 \\ a + b = 2 \end{array} \right.$$

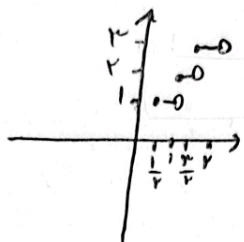
$$\frac{[x]}{x} + \frac{|x|}{x} \rightarrow [-1, 0) \rightarrow -\frac{1}{x} - 1$$

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

$$\{1\} \rightarrow 2$$



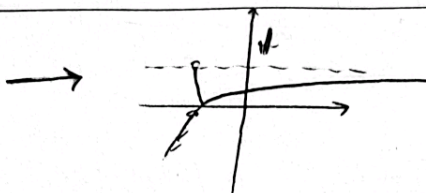
$$\begin{aligned} \left[\frac{1}{2}, 1 \right] &\rightarrow 0+1=1 \\ \left[1, \frac{3}{2} \right] &\rightarrow 2 \\ \left[\frac{3}{2}, 2 \right] &\rightarrow 3 \end{aligned}$$



۳ باره خود

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$$\left| \frac{x+1}{ax+3} \right| \leq 1$$

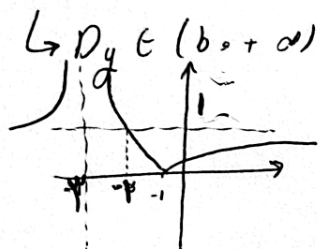


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$$a=1 \leftarrow 1 = 1$$

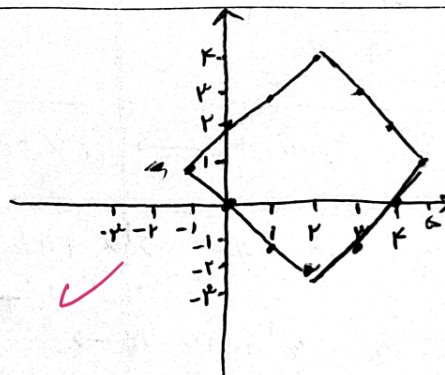
$$\{ a-b=1+2=3 \}$$

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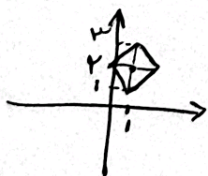
$$\rightarrow b = -4$$

$$\begin{cases} x > 2, y > 1; & x+y-3=3 \rightarrow x+y=6 \\ x < 2, y \geq 1; & y-x+1=3 \rightarrow y-x=2 \\ x > 2, y < 1; & x-y-1=3 \rightarrow x-y=4 \\ x < 2, y < 1; & -x-y+3=3 \rightarrow x+y=0 \end{cases}$$

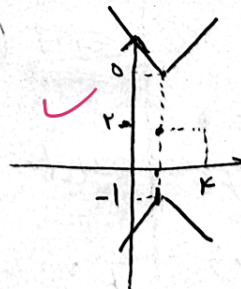


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$$\text{الف) } |x-1| + |y-2| = 1$$



$$\text{ب) } |x-2| - |x-1| = 3$$



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$$\frac{-b}{(3-a)x-b} \mid \frac{(3+a)x+b}{(3-a)x-b}$$

هر دو نمودار از یکدیگر عبور کنند
شیب ها هم علامت باشند تا
برد IR باشند

}

$$b=0 \text{ و } (3-a)(3+a) \rightarrow \frac{-3}{-1}$$

$$a \in (-3, 3)$$

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