

① $y = ax + b$
 $\Rightarrow 2ax + a + b + ax + 2a + b = 3x + 3a + b \Rightarrow 3a(x) + 3a + 2b = 3x + 3a + b \Rightarrow a=1, b=0$

$\Rightarrow y = x \Rightarrow \sqrt{x-x^2} \Rightarrow x-x^2 \geq 0 \Rightarrow \frac{-1 \pm 1}{-2} \rightarrow [0, 1]$

② $\frac{x(x-2)(x+2)}{x+2} = x(x-2) \Rightarrow f(x) = x^2 - 2x \Rightarrow$  $\Rightarrow R_f = [-1, \infty) - \{1\}$

$\Rightarrow D_f = R - \{a, b\}$ $\Rightarrow \frac{x^3 - 2x}{x+2} = 1 \Rightarrow x = 1 \Rightarrow b = 1$
 (Note: $x=1$ is a root of the numerator, $x=-2$ is a root of the denominator)

$\Rightarrow f\left(\frac{1-2}{-2}\right) = f(-1) = \frac{-1+1}{1} = 0$

③ چوں تابع خطی است باید فرجه سه و دو آنجا ساده شوند $\Leftarrow$ عبارت زیر را دیکال باید ملوک کامل باشد.

$\sqrt[3]{(x-2)^3} = \sqrt{x^3 - 12x^2 + 24x - 8} \Rightarrow a = -4, b = 12 \Rightarrow D_f = [-4, 12]$

$\Rightarrow f(x) = x-2 \Rightarrow R_f = \frac{-4-2}{12-2} = -1 \Rightarrow [-1, 10]$

④ $\frac{x+1}{1-x} \geq 0 \Rightarrow \frac{-1}{-1+1} \Rightarrow D_f = [-1, 1)$

$\rightarrow \frac{ax^2-1}{x^2+b} \xrightarrow{\text{بردار}} \begin{cases} x^2=0 \rightarrow y=-1 \Rightarrow \frac{-1}{b}=-1 \Rightarrow b=1 \\ x^2=\infty \rightarrow y=1 \Rightarrow \frac{a}{1}=1 \Rightarrow a=1 \end{cases} \Rightarrow a+b=2$

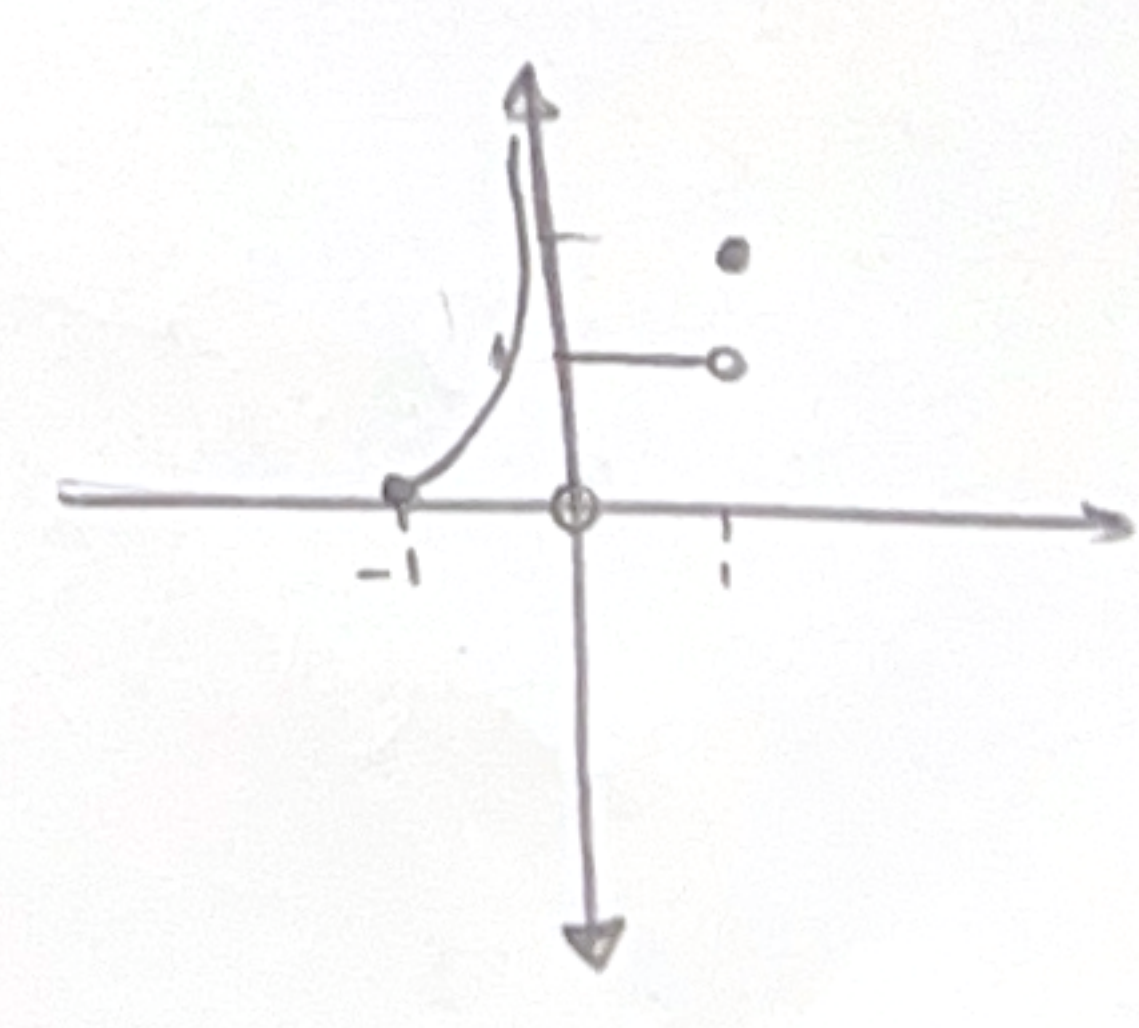
$x=0 \rightarrow 0 \cdot 1 = 0$

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

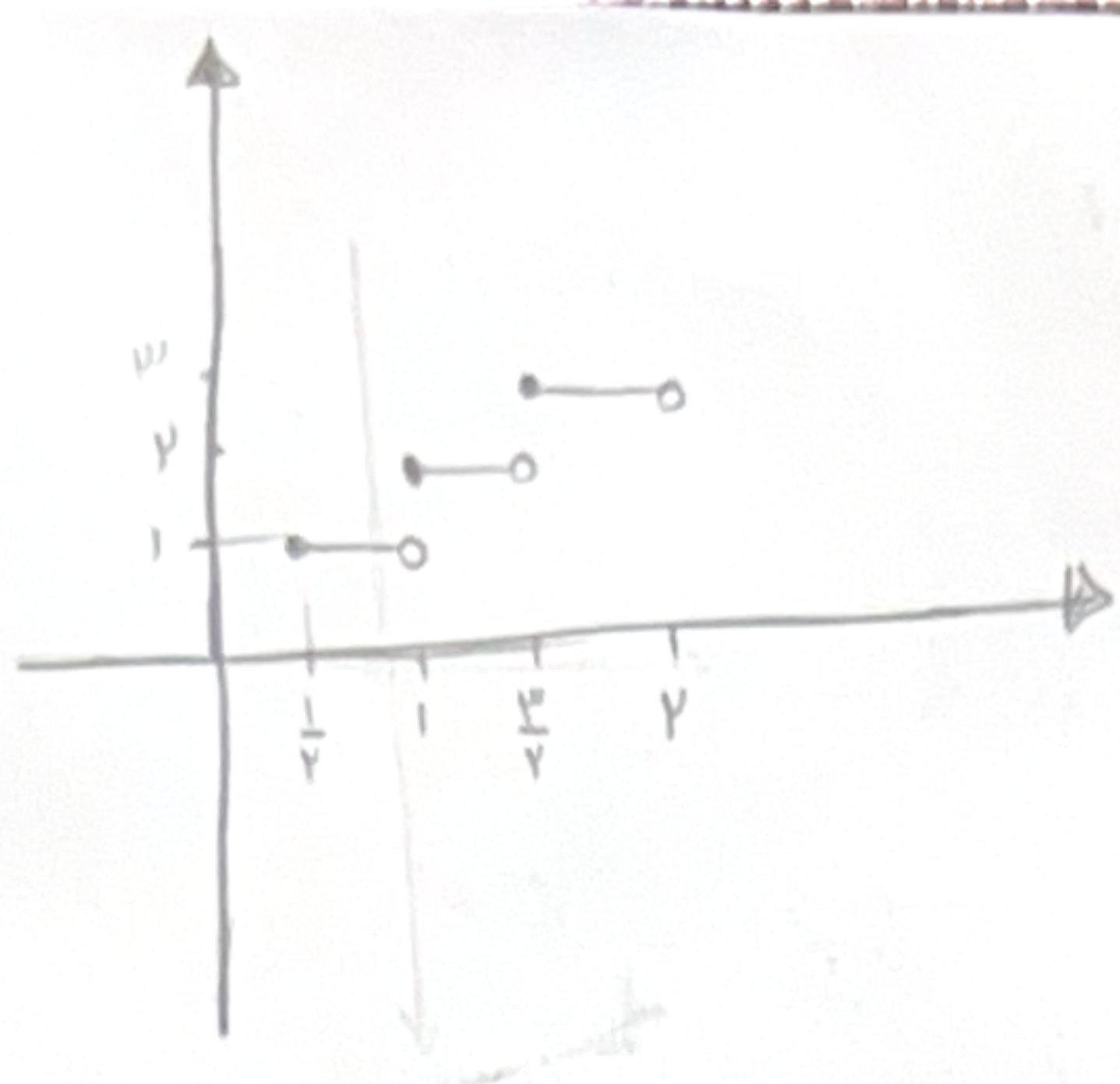
$x=1 \rightarrow 1+1=2$

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

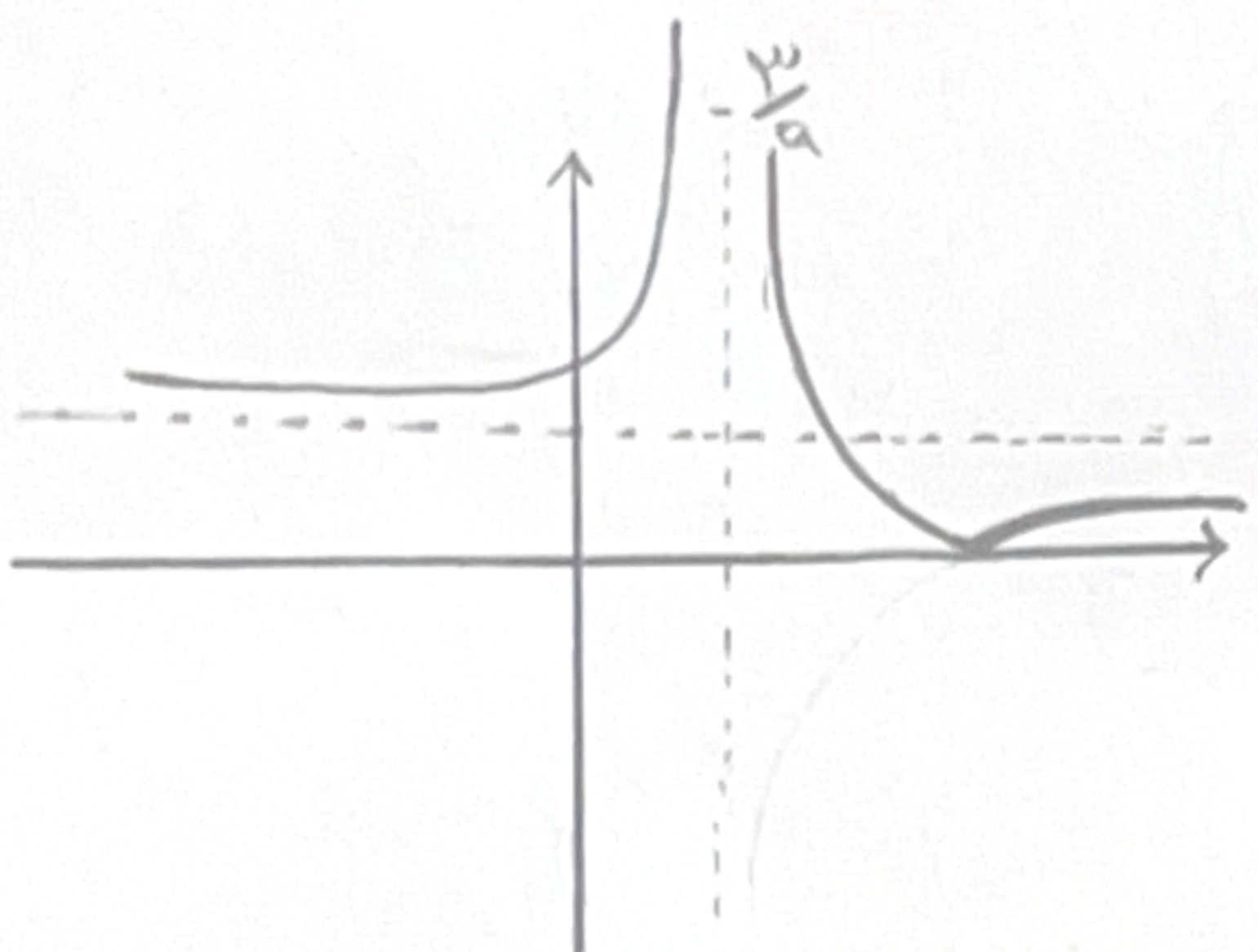
$x=-1 \rightarrow 1+(-1)=0$



①
②
③
④
⑤



از این یاره خط
تشکیل شده

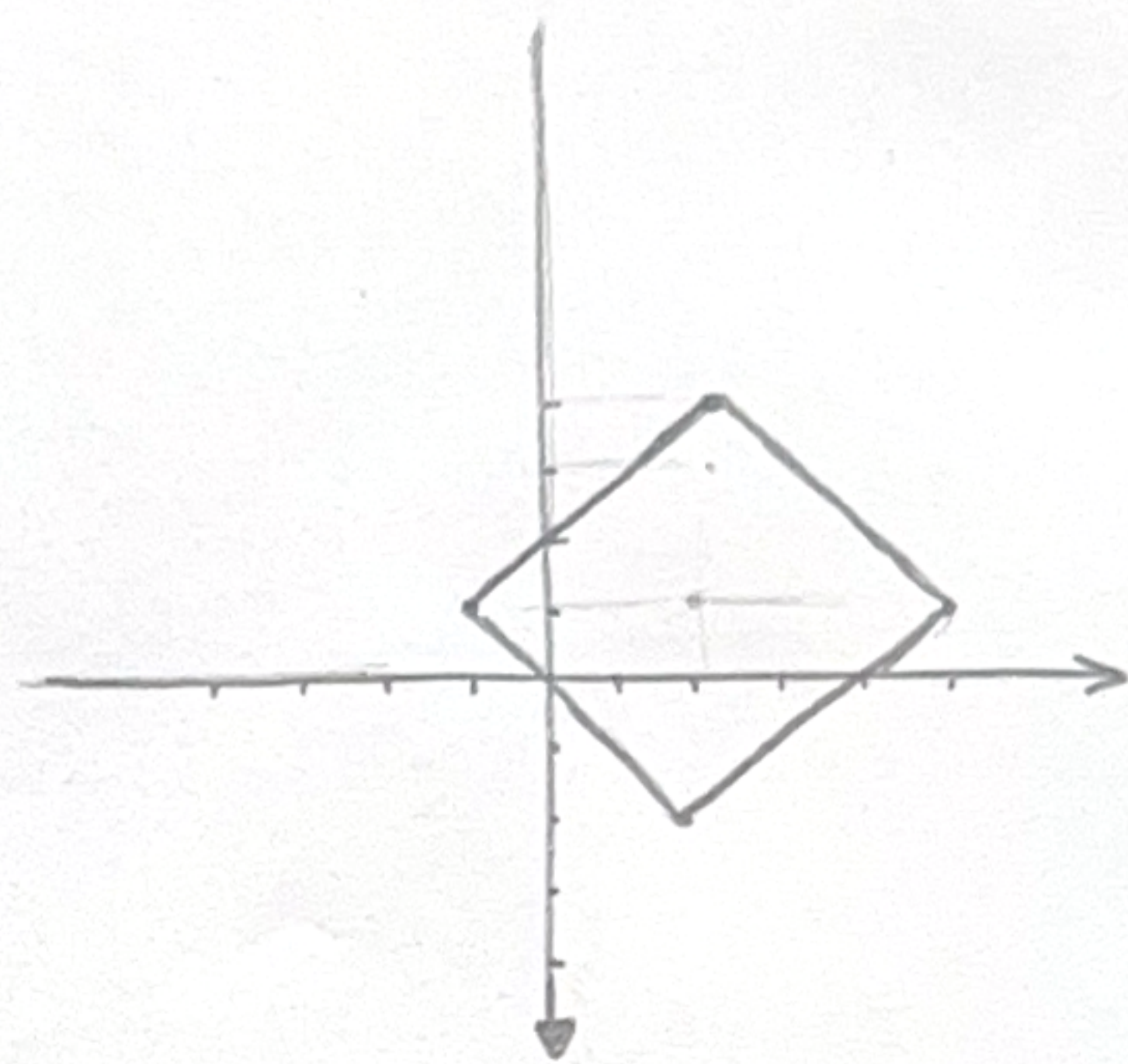


$$\frac{1}{a} = 1 \Rightarrow a = 1$$

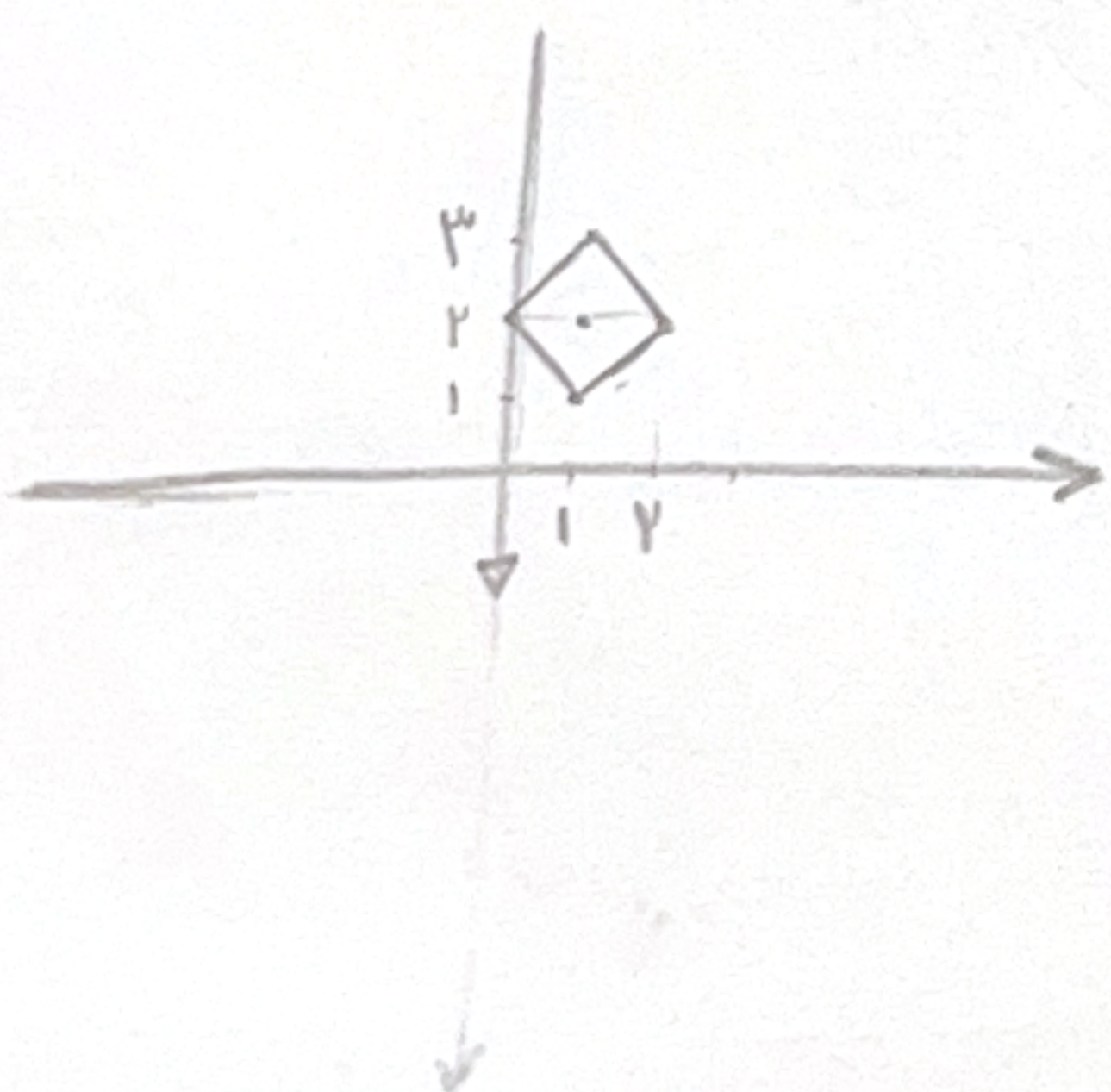
$$-\frac{3}{a} = b \Rightarrow b = -3$$

$$a - b = \sqrt{5}$$

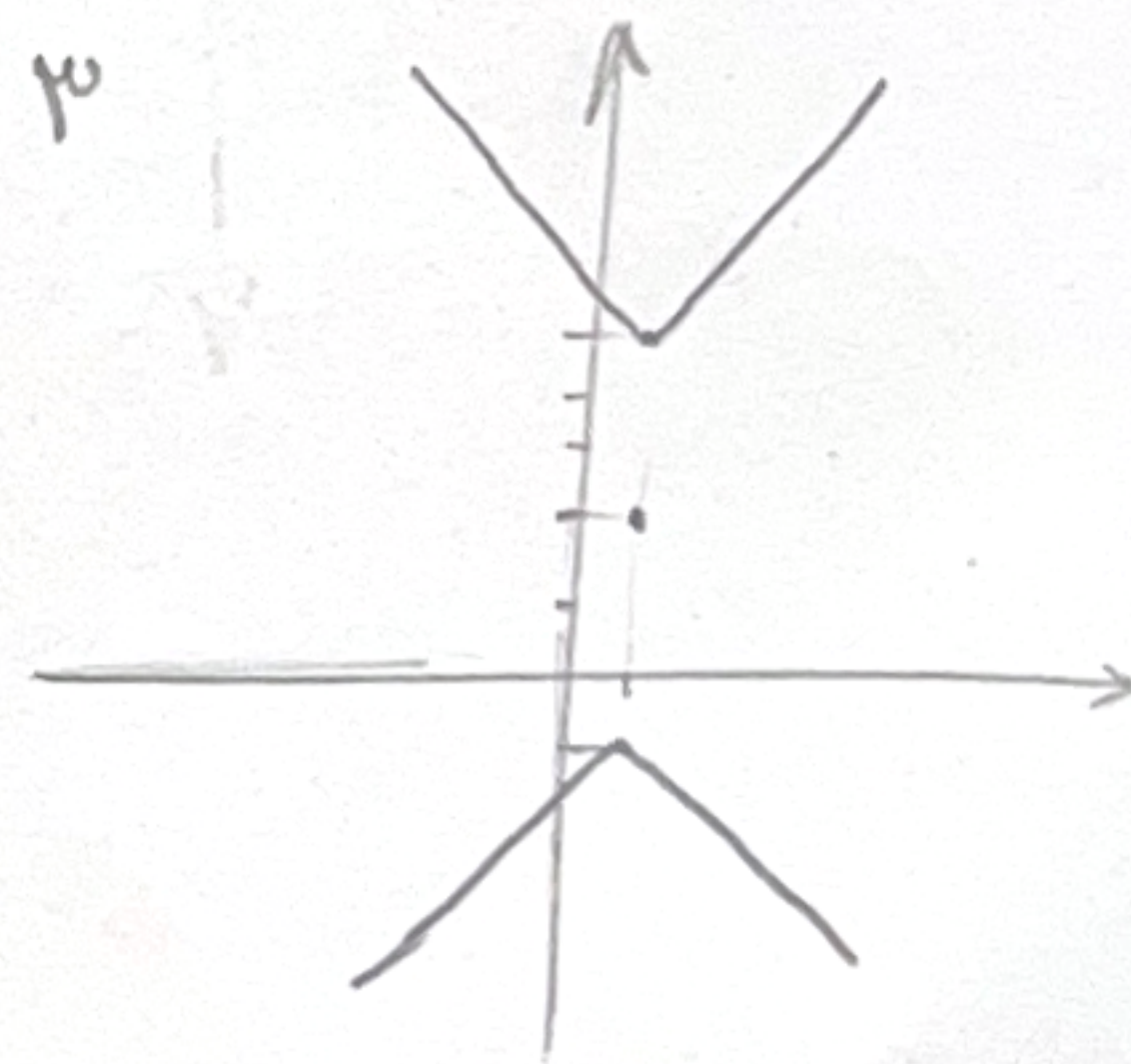
$$\begin{aligned} x \geq 2 & \rightarrow |y-1| = \frac{-x+2+3}{-x+5} \begin{cases} y \geq 1 & -x+4 \\ y < 1 & x+5 \end{cases} \\ x < 2 & \rightarrow |y-1| = \frac{x-2+3}{x+1} \begin{cases} y \geq 1 & x+2 \\ y < 1 & -x \end{cases} \end{aligned}$$



(الف)



(ب) $|y-2| - |x-1| = 3$



(۱۵) جواب بد R است هیچگاه نباید تغییر علامت دهد یا منفی شود.

$$\Rightarrow a < 3 \Rightarrow a = (-3, 3)$$