محمد موقعیتی ←

۲۰

$g = \{(-1,1),(0,3),(2,0),(1,2)\}$ ←۱

$D_f \cap D_g = \{-1,0,1\} \to 2g-3f = \{(-1,2)(0,5)(1,4)\} \to$

$2+5+4 = 11$

۵

$f(x) = 2x-1 \qquad D_f = [3,+\infty) \to \frac{y+1}{2} = x$ ←۲

$\to 3 = \frac{y+1}{2} \to y = 5 \to R_f = [5,+\infty)$ ①

۵

$g(x) = \frac{1}{3}x+3 \qquad D_g = (-\infty,3] \to 3y-9 = x \to$

$3 = 3y-9 \to y = 4 \to R_g = (-\infty,4]$ ②

$\to$ ① $\cup$ ② $\to (-\infty,4] \cup [5,+\infty)$

$y = -\frac{x^2}{2} + x + 3 \to -\frac{x^2}{2} + x + 3 \geqslant \frac{3}{2} \to -x^2+2x+6 \geqslant 3$ ←۳

$\to -x^2+2x+3 \geqslant 0 \to$

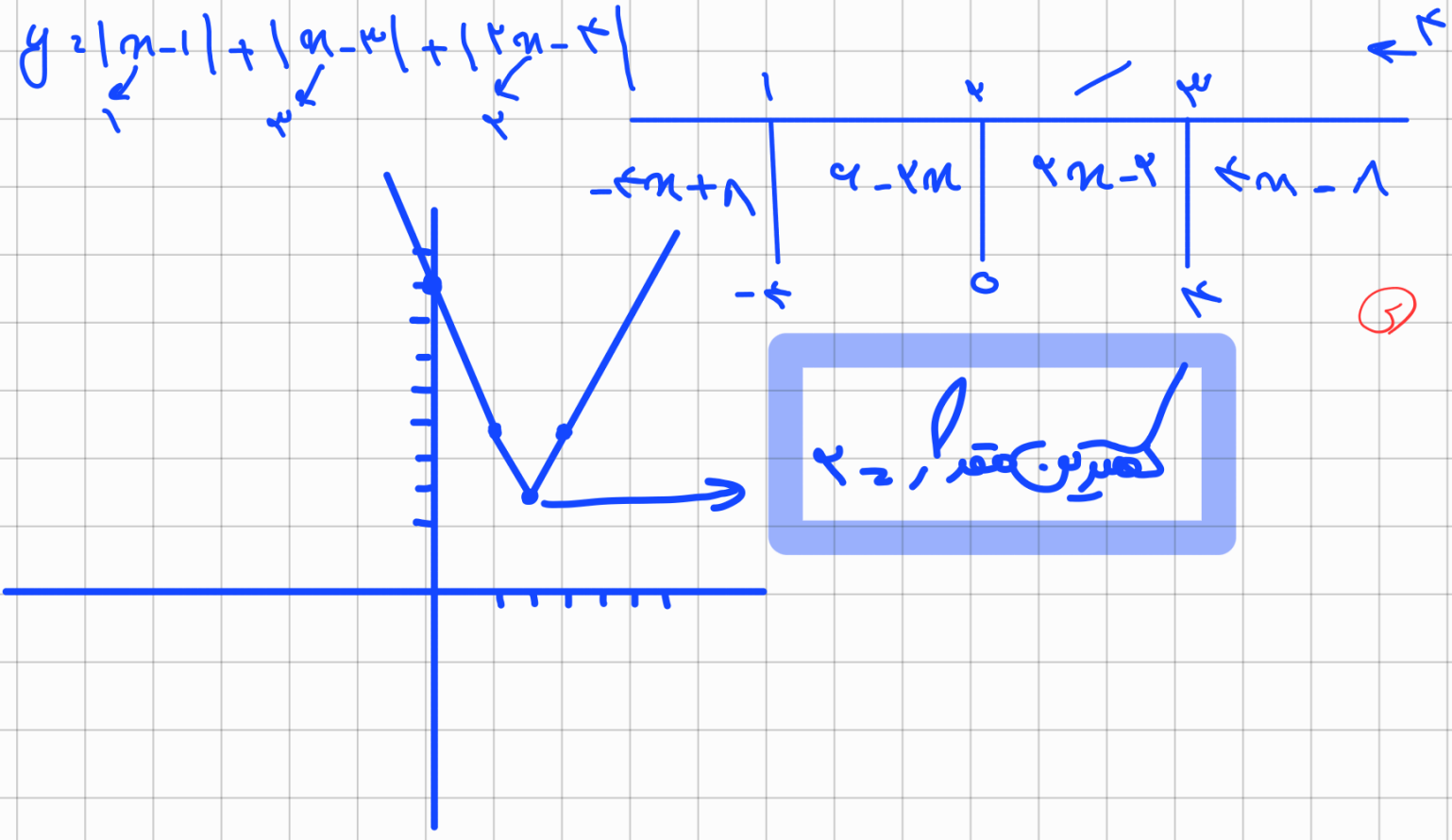
	-1		3	
$-$	|	$+$	|	$-$

$\to (-1,3) \to$ ($-1 = a$, $3 = b$)

۵

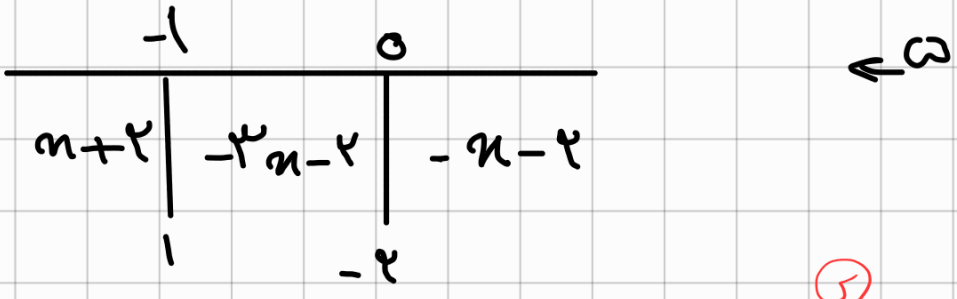
$\sqrt{b-a} = \sqrt{3+1} = 2$

$y = |x-1| + |x-3| + |2x-4|$

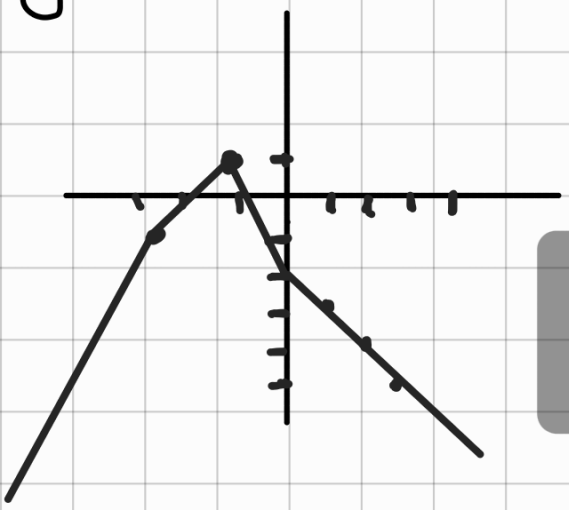


کمترین مقدار $= 2$ ③

$y = |x| - 2|x+1|$ →



③



$R_f = (-\infty, 1]$

$y = \frac{x^2 + 5x + m}{x+1} \Rightarrow yx + y = x^2 + 5x + m \Rightarrow x^2 + (5-y)x + (m-y) = 0$ ← ۶

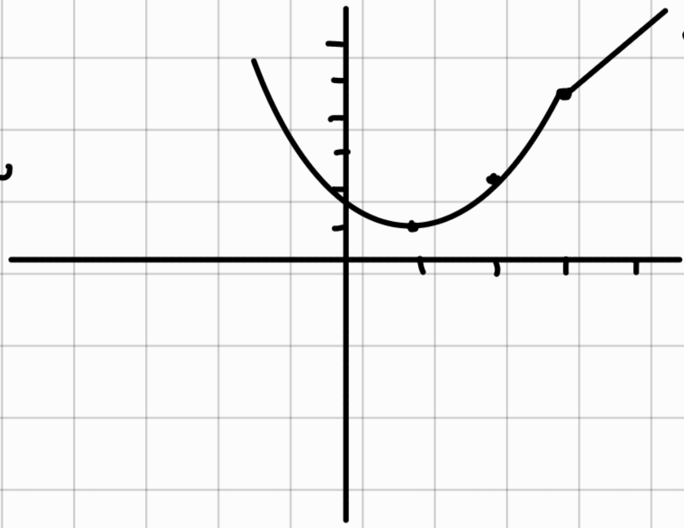
$(5-y)^2 - 4(m-y) = y^2 - 10y + 25 - 4m + 4y = y^2 - 6y + (25 - 4m)$

$\frac{-b}{2a} = 3 \rightarrow 9 - 6\times 3 + (25 - 4m) = 16 - 4m \geq 0 \rightarrow$ ✓

$m \leq 4 \rightarrow x \neq -1 , m = 4 \rightarrow$ صفر صفر تعریف نشده ← ۳ مقدار طبیعی برای

$\{1, 2, 3\}$ ← m جوابها

$f(x) \rightarrow \begin{cases} x + 2 & x \geq 3 \\ x^2 - 2x + 2 & 0 \leq x < 3 \\ |x| + 2 & x < 0 \end{cases}$ ← ۷



$\rightarrow R_f = [1, +\infty)$

$f(x) = \begin{cases} x^2 + 4x + 3 & x \leq 0 \\ [2x] - 2x & x > 0 \rightarrow (-1, 0] \text{ همیشه بازه} \end{cases}$ ← ۸

$R_f = [-1, +\infty)$

$g: a+1-\sqrt{2x+3}$ $\quad D_f = [b, +\infty) \rightarrow$ ←9

$2x+3 \geq 0 \rightarrow x \geq -\frac{3}{2} \rightarrow b = -\frac{3}{2}$

(5)

$R_f = (-\infty, a] \rightarrow a+1-\sqrt{2x+3} = a \rightarrow$

$a = -\sqrt{2x+3} \rightarrow a = -\sqrt{2(-\frac{3}{2})+3} \rightarrow$ $\boxed{ab = -4}$

$f(x) = 2\sqrt{x+1} + 2\sqrt{1-x}$ ←10

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

$\frac{f}{2} - \frac{f}{3} - \frac{g(x)}{3} \rightarrow \frac{f}{2} - (\frac{f}{3} + \frac{g(x)}{3}) \rightarrow$

(5)

$\sqrt{x+1} + 2\sqrt{1-x} - (\sqrt{2+2\sqrt{1-x^2}}) \rightarrow$

$-1 \rightarrow 2\sqrt{2} - \sqrt{2} = \sqrt{2}$

$1 \rightarrow \sqrt{2} - \sqrt{2} = 0$

$\rightarrow \boxed{R = [0, \sqrt{2}]}$