

$$f(x) = \sqrt{1-x^2} \Rightarrow 1-x^2 \geq 0 \Rightarrow -1 \leq x \leq 1 \Rightarrow$$

$$f(-1) = \sqrt{1-(-1)^2} = \sqrt{0} = 0 \quad g(-1) = 1, g(0) = f, g(1) = 2$$

$$f(0) = 1 \quad f(1) = 0$$

$$x = -1 \rightarrow 2y - 2f \rightarrow 2 - f(0) = 2$$

$$x = 1 \rightarrow 2(2) - 2(0) = 4 \Rightarrow R_f : [2, +\infty)$$

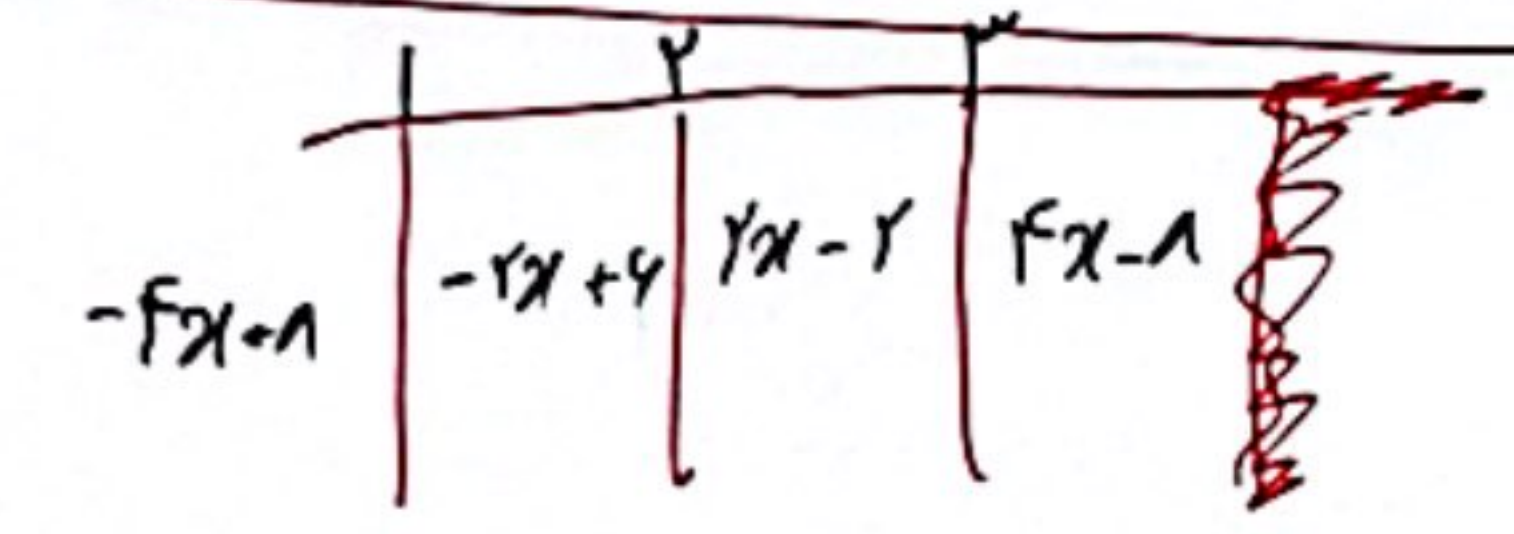
$$\left. \begin{aligned} f(x) = 2x - 1 &\Rightarrow D_f = [2, +\infty) \Rightarrow f(2) = 3 \rightarrow R_f = [3, +\infty) \\ g(x) = \frac{1}{x} x + 2 &\Rightarrow D_g = (-\infty, 2] \Rightarrow g(2) = 2 \rightarrow R_g = (-\infty, 2] \end{aligned} \right\} R_{f \circ g} = (-\infty, 2] \cup [3, +\infty)$$

$$y = \frac{-x^2}{y} + x + 2 \Rightarrow \frac{-x^2}{y} + x + 2 > \frac{2}{y} \Rightarrow \frac{-x^2}{y} + x + \frac{2}{y} > 0 \Rightarrow x^2 - 2x - 2 < 0$$

$$\begin{array}{c|c|c} -1 & 2 \\ \hline + & - & + \end{array}$$

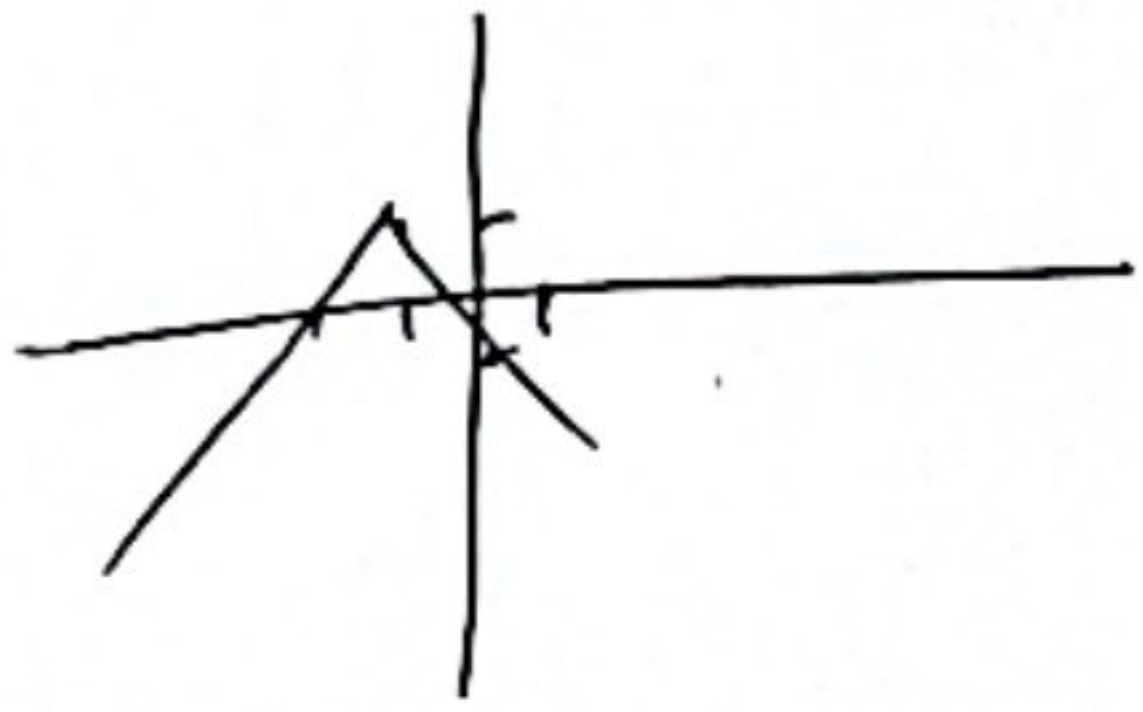
$$\sqrt{b-a} \Rightarrow \sqrt{2-(-1)} = \sqrt{3}$$

$$a = -1, b = 2 \Rightarrow (-1, 2)$$



$$\begin{aligned} x = 2 &\rightarrow 2 \\ x = 3 &\rightarrow 2 \\ x = 1 &\rightarrow 2 \end{aligned}$$

$$\begin{array}{c|c|c} -1 & 0 \\ \hline x+2 & -2x-2 & -x-2 \end{array}$$

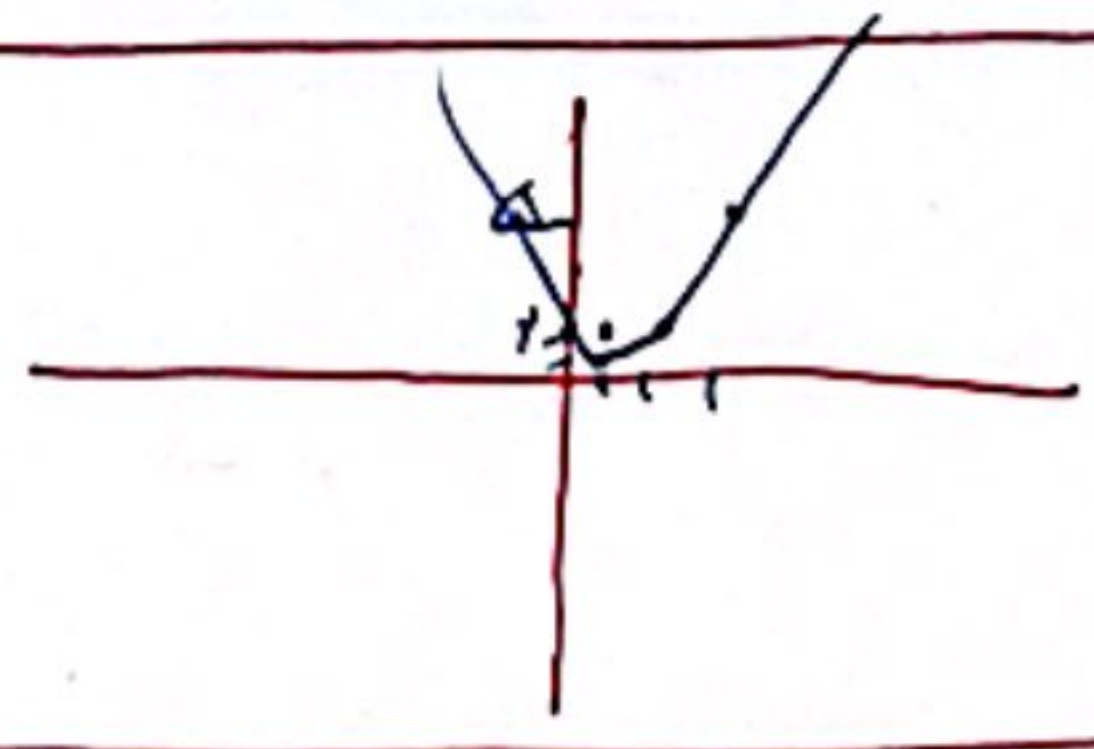


$$R_f = (-\infty, 1]$$

$$y = \frac{x^2 + \alpha x + m}{x+1} \quad R = \mathbb{R} \quad y(x+1) = x^2 + \alpha x + m \Rightarrow x^2 + (\alpha - y)x + (x - y) = 0$$

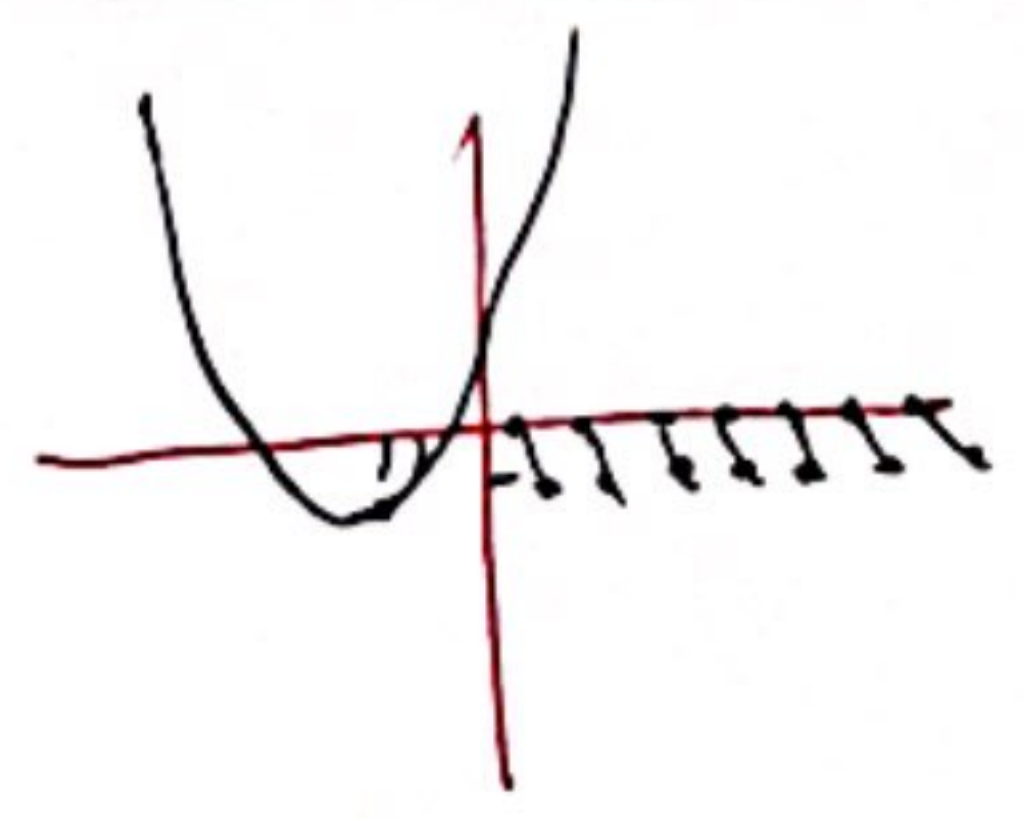
$$\begin{aligned} (\alpha - y)^2 - 4(x - y) &= y^2 + 2\alpha - 4y - 4m + 4y - y^2 - 4y + 2\alpha - 2x \Rightarrow 2y(2\alpha - 4m) + 2 = 2y - 1 + 2y \Rightarrow \\ 4y - 4\alpha &\leq 0 \Rightarrow m \leq \frac{\alpha}{2} \Rightarrow m < \frac{\alpha}{2} \rightarrow (2, 2) \rightarrow 2 \end{aligned}$$

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



$$R_f = [2, +\infty)$$

$$f(x) = \begin{cases} x^2 + x + 2 & x \leq 0 \\ [2x] - 2x & x > 0 \end{cases}$$



$$R_f = [2, +\infty)$$

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

$$D_f = [b, +\infty) \quad R_f = (-\infty, a]$$

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$$2x+3 \geq 0 \rightarrow x \geq -\frac{3}{2} \rightarrow \underline{b = -\frac{3}{2}} \quad x = -\frac{3}{2} \Rightarrow y = a+1-0 = a+1$$

$$\sigma = a+1$$

$$2x - \frac{3}{2} = \textcircled{-9}$$

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