

$$f(x) = \sqrt{1-x^2} \rightarrow 1 \geq x^2 \rightarrow 1 \geq x \geq -1 \rightarrow x = \begin{cases} -1 \\ 0 \\ 1 \end{cases} \rightarrow f(x) = \{(1,0), (-1,0), (0,1)\}$$

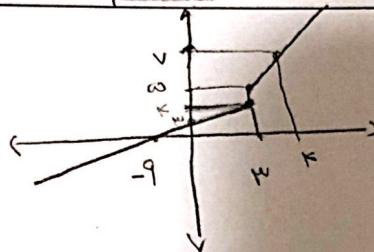
$$g = \{(-1,1), (0,2), (1,0), (1,2)\}$$

$$h = \{(1,0), (-1,0), (0,3)\}$$

$$f \cup g = \{(-1,1), (0,2), (1,0), (1,2)\} \rightarrow f \cup g \cup h = \{(1,2), (-1,2), (0,3)\} \rightarrow f \cup g \cup h = \textcircled{11}$$

$$f(x) = 2x - 1 \rightarrow D_f = [3, +\infty)$$

$$g(x) = \frac{1}{x} x + 3 \rightarrow D_g = (-\infty, 3]$$



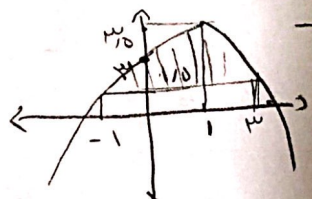
$$R_{g \cup R_f} \rightarrow R - (2, 5)$$

$$y = \frac{-x^2}{2} + x + 3 \rightarrow \frac{-x^2}{2} + x + 3 = \frac{3}{2} \rightarrow \frac{-x^2}{2} + x = -\frac{3}{2}$$

$$D_f = (a, b)$$

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

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



$$-x^2 + 2x = -3$$

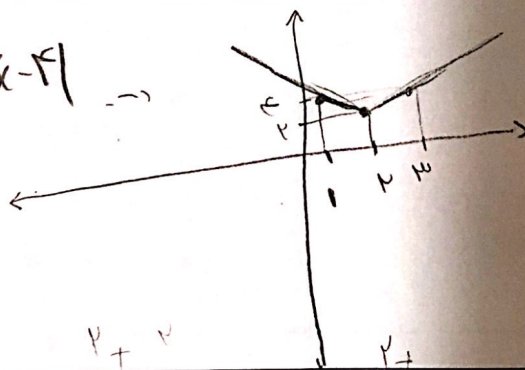
$$\rightarrow -x^2 + 2x + 3 = 0$$

$$\rightarrow x^2 - 2x - 3 = 0$$

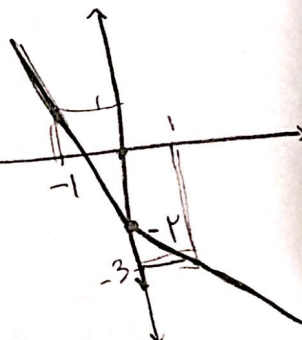
$$\rightarrow (x-3)(x+1) = 0$$

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

$$y_{\min} = 2$$



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



$$R_f = \mathbb{R}$$

$$\begin{array}{l} -x + 2x + 1 \\ \rightarrow +x + 1 \\ \hline -x - 2x - 2 \\ \rightarrow -3x - 2 \\ \hline x - 2x - 2 \\ \rightarrow -x - 2 \end{array}$$

$$y = \frac{x^2 + 2x + m}{x+1} \rightarrow yx + y = x^2 + 2x + m$$

$$\rightarrow x^2 + x(2-y) + m-y = 0$$

$$\rightarrow (2-y)^2 + 4(1-\varepsilon)(m-y) \geq 0$$

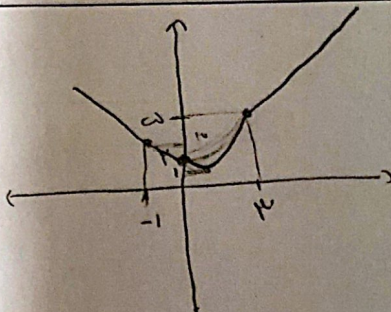
$$\rightarrow 2(2-y)^2 - 4m + 4y \geq 0 \rightarrow y^2 - 4y + 4m \geq 0$$

$$9 - 12 + 4m \rightarrow 14 - 4m \geq 0 \rightarrow m \geq \frac{7}{2}$$

$$\min = 3$$

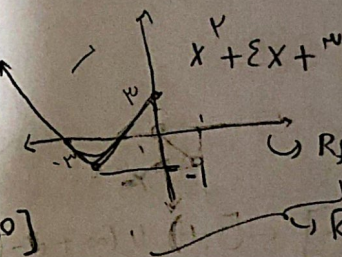
$$m = \{1, 2, 3, 4\}$$

$$f(x) = \begin{cases} x+1 & x \geq 1 \\ x^2 - 2x + 2 & 0 \leq x < 1 \\ |x|+1 & x < 0 \end{cases}$$



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

$$f(x) = \begin{cases} x^2 + 2x + 1 & x \leq 0 \\ [2x] - 2x & 0 < x < 1 \\ 2[2x] - 2x & x \geq 1 \end{cases}$$



$$R_f = [-1, +\infty) \cup (-1, 0]$$

$$y = a+1 - \sqrt{2x+1} \rightarrow 2x+1 \geq 0 \rightarrow x \geq -\frac{1}{2}$$

$$R_y = (-\infty, \infty) \rightarrow a+1 - (0) = a \rightarrow a = 1$$

$$D_y = [b, +\infty) \rightarrow b = -1/2$$

$$f(x) = \sqrt{x+1} + \sqrt{1-x} \rightarrow \begin{cases} x+1 \geq 0 \rightarrow x \geq -1 \\ 1-x \geq 0 \rightarrow x \leq 1 \end{cases} \rightarrow D_f = [-1, 1]$$

$$f(x) + g(x) = \sqrt{x+1} + \sqrt{1-x} \xrightarrow{x=1} \sqrt{2} + g(1) = \sqrt{2} \rightarrow g(1) = \sqrt{2} - \sqrt{2} = 0$$

$$D_f = D_g$$

$$D_g = [-1, 1] \rightarrow y = \frac{f(x) - g(x)}{4} \rightarrow [0, 1]$$

$$\sqrt{2} + g(-1) = \sqrt{2} - \sqrt{2} = 0 \rightarrow g(-1) = 0$$