

$$D_f \cap D_g = \{-1, 0, 1\} \Rightarrow x = -1 \rightarrow g(-1) = 1, f(-1) = \sqrt{1-1} = 0 \Rightarrow yg - xf = (2 \times 1) - (3 \times 0) = 2$$

$$x = 0 \rightarrow g(0) = 4, f(0) = \sqrt{1-0} = 1 \Rightarrow yg - xf = (2 \times 4) - (3 \times 1) = 5$$

$$x = 1 \rightarrow g(1) = 2, f(1) = 0 \Rightarrow yg - xf = (2 \times 2) - (3 \times 0) = 4$$

$$\sum_{i=1}^n x_i^2 \rightarrow 2 \times 4 + 2 = 10$$

$$f(x) = x - 1 = 0 \Rightarrow R_f = [0, +\infty) \quad g(x) = 1 + x^2 = 4 \Rightarrow R_g = (-\infty, 2]$$

$$R_f \cup R_g = R - (2, 4)$$

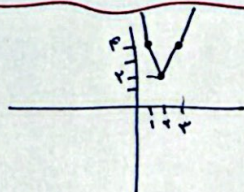
$$y = \frac{-x^2}{2} + x + \frac{3}{2}$$

$$\frac{-1}{2} = \frac{a}{b} \Rightarrow a = -1, b = 2$$

$$\frac{-x^2}{2} + x + \frac{3}{2} > 0 \Rightarrow -x^2 + 2x + 3 > 0 \Rightarrow x^2 - 2x - 3 < 0 \Rightarrow (x-3)(x+1) < 0$$

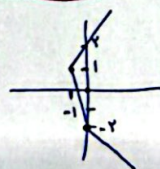
$$\sqrt{2+1} = \sqrt{3}$$

$$\begin{array}{c|c|c} 1 & 2 & 3 \\ \hline -f(x+1) & & f(x-1) \\ \downarrow & & \downarrow \\ f & & f \end{array}$$



$$\Rightarrow \text{مقیوسه} \rightarrow (2)$$

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

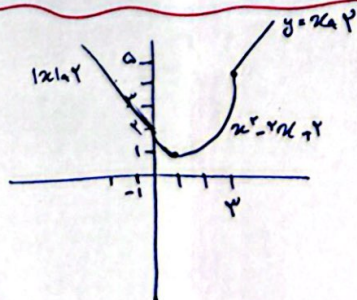


$$\Rightarrow R = [-1, +\infty)$$

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

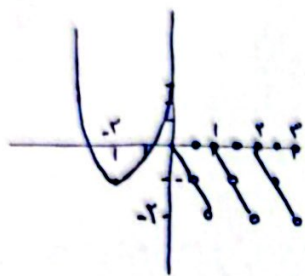
$$y = \frac{x^2 + 0x + m}{x+1} \Rightarrow y(x+1) = x^2 + 0x + m$$

$$x^2 + (0-y)x + m - y = 0 \Rightarrow \Delta \geq 0 \Rightarrow y^2 - 0y + 4m - 4y \geq 0 \Rightarrow y^2 - 4y + 4m \geq 0 \Rightarrow 4m \geq 4y - y^2 \Rightarrow m \geq y - \frac{y^2}{4}$$



$$f(x) = \Delta \quad y = x^2 - 2x + 2 \quad \left| \frac{b}{2a} = 1 \right|$$

$$\left. \begin{array}{l} f(x) = \Delta \\ y = x^2 - 2x + 2 \end{array} \right\} R = [1, +\infty)$$



$$y = x^2 + 2x + 3 \rightarrow \begin{vmatrix} \frac{b}{2a} & -\frac{c}{a} \\ -1 & 3 \end{vmatrix}$$

-1

$$\Rightarrow R = (-2, +\infty) - \{-1\}$$

(1,0)

$$\sqrt{x+2} \rightarrow x+2 \geq 0 \quad x \geq -\frac{2}{1} \Rightarrow b = -\frac{2}{1} \quad \begin{matrix} x = -\frac{2}{1} & a+1-0 = 4 \\ & \Rightarrow a = 2 \end{matrix} \quad \left\{ \begin{matrix} ab = -2 \end{matrix} \right. \quad \text{9}$$

$$f(x) \rightarrow \begin{matrix} x+1 \geq 0 \\ x \geq -1 \end{matrix} \quad \begin{matrix} -x+1 \geq 0 \\ x \leq 1 \end{matrix} \quad \left\{ \begin{matrix} 1 \end{matrix} \right\} \Rightarrow D_f = \{1\} \Rightarrow f(1) = 2\sqrt{2}$$

-10

(7,0)

$$D_f = D_g \Rightarrow D_g = \{1\} \rightarrow f(x) + g(x) = 2\sqrt{2+2\sqrt{1-1}} = 2\sqrt{2}$$

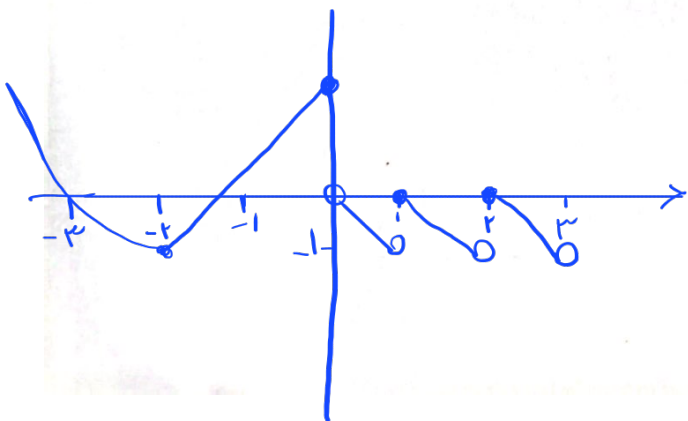
$$2\sqrt{2} + g(1) = 2\sqrt{2} \Rightarrow g(1) = \sqrt{2} \quad \Rightarrow y = \frac{f(x)}{x} - \frac{2g(x)}{x} = \frac{2\sqrt{2}}{2} - \frac{2\sqrt{2}}{2} = 0$$

$$\hookrightarrow (1, 0) \Rightarrow 0 = 25$$

$$f(n) + g(n) = 2\sqrt{1+2} + 2\sqrt{1-2n} \xrightarrow{2 \circ 1} 2(\sqrt{1-2n} + \sqrt{1+n}) \xrightarrow{2 \circ 1} 2(\sqrt{1-2n} + \sqrt{1+n})$$

$$\rightarrow g(n) = \sqrt{1+n} - \sqrt{1-2n} \quad \frac{f(n)}{n} - \frac{g(n)}{n} = \sqrt{1-2n}$$

$R = [-1, \sqrt{2}]$



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

(1)