

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

$$eg - pf = \{(-1,1), (0,2), (1,0)\} \Rightarrow R_{fg} = \{1, 2, 0\}$$

$$2. f(n) = n-1 \quad D_f = [1, +\infty)$$

$$R_f \cup R_g = ?$$

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

$$R_f \cup R_g = \mathbb{R} - (2, \omega)$$

11

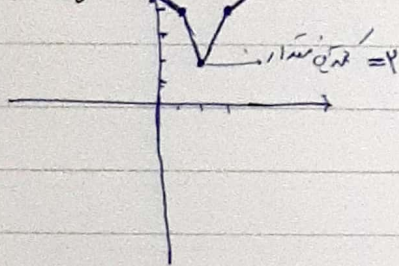
$$f(x) \rightarrow R_f = [\omega, +\infty), R_g = (-\infty, 2]$$

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

$$\frac{-x^2}{x} + x + 3 > \frac{3}{x} \rightarrow -\frac{x^2}{x} + x + \frac{3}{x} > 0 \rightarrow x^2 - x - 3 < 0$$

$$\rightarrow (x-3)(x+1) < 0 \rightarrow x = (-1, 3) \Rightarrow \sqrt{b-a} = 4$$

$$4. y = |x-1| + |x-3| + |x-5|$$

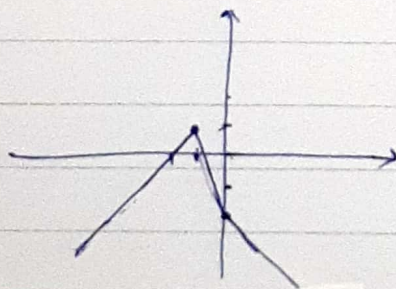


$$\begin{cases} -2x+1 & ; x \leq 1 \\ -x+4 & ; 1 < x \leq 3 \\ x-2 & ; 3 < x \leq 5 \\ 2x-1 & ; x > 5 \end{cases}$$

$$y_{\min} = 2$$

$$5. y = |x-1| - 2|x+1|$$

$$\begin{cases} x+1 & ; x \leq -1 \\ -3x-2 & ; -1 < x \leq 0 \\ -x-2 & ; x > 0 \end{cases}$$

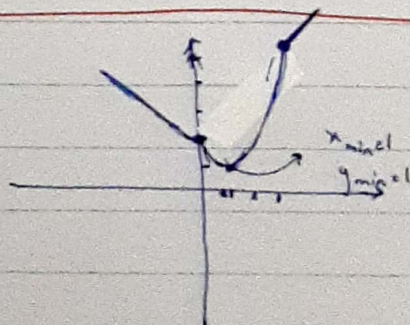


$$\Rightarrow R_f = (-\infty, 1]$$

$$6. y = \frac{x^2 + 2x + m}{x+1} \rightarrow y(x+y) = x^2 + 2x + m \rightarrow x^2 + 2x + m - y(x+y) = 0 \rightarrow x = \frac{y-2 \pm \sqrt{(y-2)^2 - 4m}}{2}$$

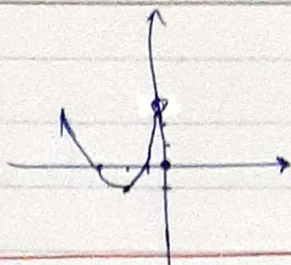
$$\Rightarrow 4(y-2)^2 - 4m \geq 0 \Rightarrow 4y^2 + 16m - 16 \geq 0 \Rightarrow m \geq 1$$

$$7. f(n) = \begin{cases} n+1 & ; n \geq 3 \\ n^2 - 2n + 1 & ; 0 \leq n < 3 \\ |x| + 1 & ; n \leq 0 \end{cases}$$



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

$$8. f(x) = \begin{cases} x^2 + 5x + 3 - (x+3)(x+1) & ; x \leq 0 \\ \lfloor \sqrt{x} \rfloor - \sqrt{x} & ; x > 0 \\ -1 < \lfloor \sqrt{x} \rfloor - \sqrt{x} \leq 0 \end{cases}$$



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

(5)

$$9. y = a + 1 - \sqrt{x+3} \quad D_f = [b, +\infty) \quad R_f = (-\infty, a]$$

(5)

$$D_f = x+3 \geq 0 \Rightarrow x \geq -3 \Rightarrow b = -3 \quad a+1 - \sqrt{x+3} = a \Rightarrow a = 1 \Rightarrow ab = -3$$

$$10. f(x) = 2\sqrt{x+1} + 3\sqrt{1-x} \quad f(x) + g(x) = 3\sqrt{x+1} + 2\sqrt{1-x} \quad D_f = D_g = [-1, 1]$$

$$D_f = [-1, 1]$$

$$\begin{cases} f(-1) + g(-1) = 2\sqrt{-1+1} + 3\sqrt{1-(-1)} = 3\sqrt{2} \Rightarrow g(-1) = 3\sqrt{2} \\ f(0) + g(0) = 2\sqrt{0+1} + 3\sqrt{1-0} = 5 \Rightarrow g(0) = 5 \\ f(1) + g(1) = 2\sqrt{1+1} + 3\sqrt{1-1} = 2\sqrt{2} \Rightarrow g(1) = 2\sqrt{2} \end{cases}$$

(5)

$$\Rightarrow \frac{f(x) - 2g(x)}{4} = \frac{f(x) - 2g(x)}{4} = \begin{cases} x=1 \rightarrow \sqrt{2} \\ x=0 \rightarrow 1 \\ x=-1 \rightarrow 0 \end{cases} \Rightarrow R_g = [0, \sqrt{2}]$$

$$x^2 + (a-y)x + m - y = 0 \Rightarrow x = \frac{y - a \pm \sqrt{(a-y)^2 - 4(m-y)}}{2} \Rightarrow \dots$$

(4)

$$\Delta > 0 \rightarrow 1 > 0$$

$$\Delta < 0 \rightarrow m < 1 \rightarrow$$

m نمره ناله ك باشد

$$m = 1, 1, 1$$