

$$g = \{(-1, 1) (0, 4) (1, 2) \} \rightarrow D_g = \{ -1, 0, 1 \} : \quad \left. \begin{array}{l} D_f \cap D_g \rightarrow \{ -1, 0, 1 \} \\ f = \sqrt{1-x^2} \rightarrow 1-x^2 \geq 0 \rightarrow x^2 \leq 1 \rightarrow |x| \leq 1 \rightarrow -1 \leq x \leq 1 \end{array} \right\}$$

$$f = \sqrt{1-x^2} \rightarrow 1-x^2 \geq 0 \rightarrow x^2 \leq 1 \rightarrow |x| \leq 1 \rightarrow -1 \leq x \leq 1$$

$$fg - xf = \{ (-1, 2) (0, 5) (1, 4) \} \rightarrow R_{fg-xf} = \{ 2, 5, 4 \}$$

$$\text{مجموع اعداد} = 2 + 5 + 4 = 11$$

$$f(n) = 2x - 1 \xrightarrow{[5, +\infty)} 2(5) - 1 = 9 \quad R_f = [5, +\infty)$$

$$g(n) = \frac{1}{4}x + 3 \xrightarrow{(-\infty, 4]} \frac{1}{4}(4) + 3 = 4 \quad R_g = (-\infty, 4]$$

$$R_f \cup R_g = (-\infty, 4] \cup [5, +\infty)$$

$$\frac{-x^2}{x} + x + 3 > \frac{4}{x} \rightarrow -x^2 + x + 3 > 4 \rightarrow -x^2 + x - 1 > 0$$

$$(x+1)(x-2) > 0$$

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

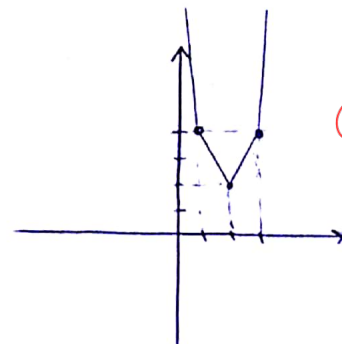
$$(a, b) = (-1, 3)$$

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

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

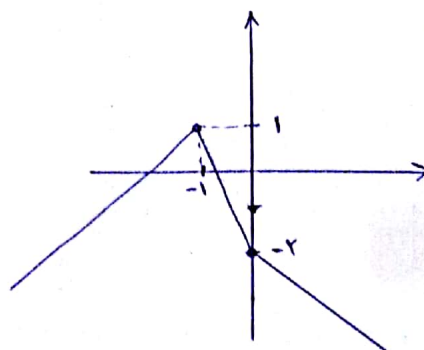
$$\begin{array}{c} 1 \quad 2 \quad 3 \\ -x+1-x+2-x+3 = -3x+6 \\ -x+1-x+2-x+3 = -3x+6 \\ -x+1-x+2-x+3 = -3x+6 \\ -x+1-x+2-x+3 = -3x+6 \end{array}$$

$$\text{مجموع} = 2$$



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

$$\begin{array}{c} -1 \quad 0 \\ -x+2x+2 = x+2 \\ -x+2x+2 = x+2 \\ -x+2x+2 = x+2 \\ -x+2x+2 = x+2 \end{array}$$



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

$$y = \frac{x^r + \omega x + m}{x+1} \rightarrow yx + y - x^r + \omega x + m \rightarrow x^r + (\omega - y)x + (m - y) = 0$$

$$\Delta = (\omega - y)^2 - 4(m - y) = \omega^2 - 2\omega y + y^2 - 4m + 4y = y^2 - 4y + \omega^2 - 4m + 4y = y^2 - 4m + \omega^2$$

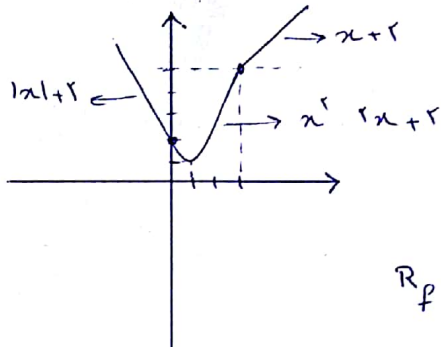
$$x = \frac{y - \omega \pm \sqrt{y^2 - 4m + \omega^2}}{2}$$

$$y^2 - 4m + \omega^2 \geq 0 \rightarrow y^2 - 4y + \omega^2 - 4m \geq 0 \rightarrow \Delta \leq 0$$

$$4y - 4(\omega - 4m) \leq 0 \rightarrow -4\omega + 16m \leq 0 \Rightarrow m \leq \omega \rightarrow \omega \in \{1, 2, 3\}$$

$$y = \frac{(n+1)(m+1)}{(n+1)} \Rightarrow m = \omega \Rightarrow m = \omega$$

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



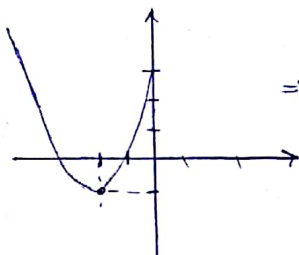
$$\left| \begin{array}{l} -\frac{b}{2a} = \frac{1}{1} = 1 \\ 1^2 - 2 + 1 = 0 \end{array} \right.$$

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

$$p(x) = \begin{cases} x^2 + 2x + 1, & x \leq 0 \\ [2x] - 2x, & x > 0 \end{cases}$$

$$\rightarrow -1 < [2x] - 2x \leq 0 \Rightarrow [-1, 0] \text{ ①}$$

$$\left| \begin{array}{l} -\frac{b}{2a} = \frac{-2}{2} = -1 \\ (-1)^2 - 2 + 1 = 0 \end{array} \right.$$



$$\Rightarrow [-1, +\infty) \text{ ②}$$

$$\text{①} \cup \text{②} \Rightarrow R_p = [-1, +\infty)$$

$$y = a + 1 - \sqrt{x+1} \quad 2x+1 \geq 0 \rightarrow x \geq -\frac{1}{2} \rightarrow x \geq -\frac{1}{2} \quad D_p = \left[-\frac{1}{2}, +\infty\right) \quad b = -\frac{1}{2}$$

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

$$a \cdot b = (1) \cdot \left(-\frac{1}{2}\right) = -\frac{1}{2}$$

$$f(x) = 2\sqrt{x+1} + 4\sqrt{1-x}$$

$$f(x), g(x) = 2\sqrt{x+1} + 4\sqrt{1-x} = 2\sqrt{(\sqrt{x+1} + 2\sqrt{1-x})^2} = 2(\sqrt{x+1} + 2\sqrt{1-x})$$

$$g(x) = f(x) + g(x) - f(x) =$$

$$2\sqrt{x+1} + 4\sqrt{1-x} - 2\sqrt{x+1} + 4\sqrt{1-x} = 4\sqrt{1-x}$$

$$\frac{f(x)}{4} = \frac{g(x)}{4} = \frac{2(\sqrt{x+1} + 2\sqrt{1-x})}{4} = \frac{\sqrt{x+1} + 2\sqrt{1-x}}{2} = \sqrt{1-x} \rightarrow 1-x \geq 0 \Rightarrow x \leq 1$$

$$D_p = D_g = [-1, 1]$$

$$x = -1 \rightarrow \sqrt{1-(-1)} = \sqrt{2} / x = 1 \rightarrow \sqrt{1-1} = 0 \Rightarrow R_p = [0, \sqrt{2}]$$