

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

$$D_{g \circ f} = \{\pm 1, 0\} \Rightarrow 2g - 3f = \{(-1, 2-0) (0, 1-3) (1, 4-0)\}$$

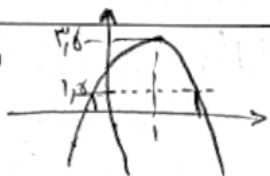
$$= \{(-1, 2) (0, -2) (1, 4)\} \Rightarrow \{x^2\}$$

$$y = 2x-1 \xrightarrow{x \in [3, +\infty)} R_y = [5, +\infty) \text{ با جابجایی}$$

$$g(x) = \frac{1}{x} x + 3 \xrightarrow{x \in (-\infty, 3]} R_{y'} = (-\infty, 4] \text{ با جابجایی}$$

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

$$y = -\frac{x^2}{2} + x + 3 \xrightarrow{\text{ext } 1, 0}$$



$$\Rightarrow -\frac{x^2}{2} + x + 3 = \frac{3}{2} \Rightarrow -\frac{x^2}{2} + x + \frac{5}{2} = 0$$

$$\Rightarrow \begin{cases} x_1 = 3 \\ x_2 = -1 \end{cases}$$

$$\Rightarrow (a, b) = (-1, 3) \Rightarrow \begin{cases} a = -1 \\ b = 3 \end{cases} \Rightarrow b - a = 3 - (-1) = 4$$

$$\Rightarrow \sqrt{b-a} = \sqrt{4} = 2$$

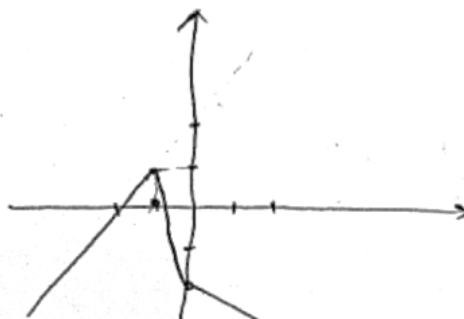
$$\begin{array}{c|c|c|c} 1 & 2 & 3 & \\ \hline -x+1 & -2x+6 & 2x-2 & 4x-1 \\ \hline \downarrow & \downarrow & \downarrow & \\ [1, +\infty) & [3, 4] & [1, 2] & \end{array} \Rightarrow [2, +\infty)$$

$$\Rightarrow \text{کترین مقدار: } 2$$



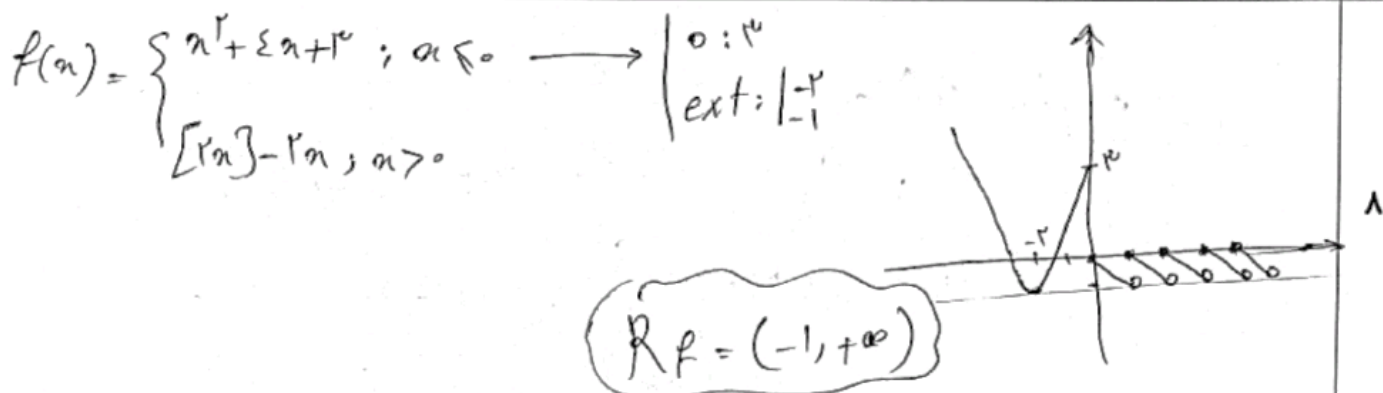
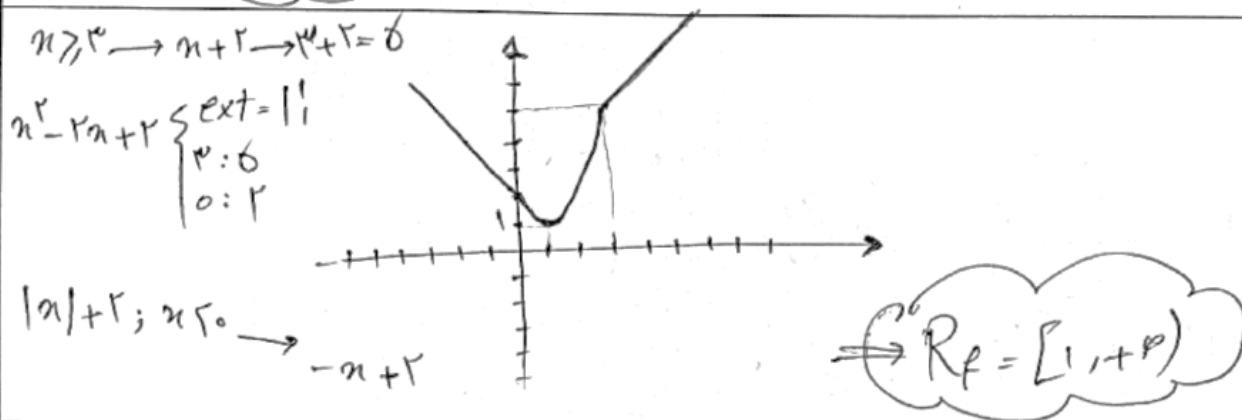
$$\begin{array}{c|c|c} -1 & 0 & \\ \hline x+2 & -2x-2 & -x-5 \\ \hline \textcircled{1} & \textcircled{-2} & \end{array}$$

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



$$y = \frac{x^2 + \delta x + m}{n+1} \rightarrow \begin{cases} \text{در مساله درجه 2 تابع IR غير منفرجه} \\ \text{مساله 2 درجه} \rightarrow R = \mathbb{R} \end{cases}$$

$$\begin{aligned} \hookrightarrow (n+1)(\text{cloud}) &= x^2 + \delta x + m \Rightarrow \text{cloud} = x - \gamma \Rightarrow m = -\gamma \Rightarrow m \leq -\gamma \\ \text{از طرفي} \hookrightarrow \text{مجموعه } R \text{ غير خالي} \text{ است پس به ازاي } \underline{x = -1} \text{ y ندارد.} \leftarrow \text{پد تا ج. IR غير منفرجه} \\ \Rightarrow \text{صفر عدد طبيعي} \end{aligned}$$



$\sqrt{x} \rightarrow \text{graph} \Rightarrow -\sqrt{x} = \text{graph} \Rightarrow \delta - \sqrt{x} \Rightarrow R = (-\infty, \delta]$
 $\Rightarrow \boxed{a = \varepsilon}$
 $\sqrt{x+2} \geq 0 \rightarrow x+2 \geq 0 \rightarrow x \geq -2 \rightarrow \boxed{b = -\frac{4}{\varepsilon}} \Rightarrow ab = (\varepsilon)(-\frac{4}{\varepsilon}) = -4$

$\sqrt{x+1} \geq 0 \rightarrow x \geq -1$
 $\sqrt{x+1} \geq 0 \rightarrow x \leq 1 \Rightarrow x = [-1, 1]$
 $f(1) = 2\sqrt{2} \rightarrow f(1) + g(1) = 3\sqrt{2} \Rightarrow \underline{g(1) = \sqrt{2}} \quad Dg = Df$
 $f(-1) = \sqrt{2} \rightarrow f(-1) + g(-1) = 2\sqrt{2} \rightarrow g(-1) = -\sqrt{2}$
 $\frac{f(x)}{4} - \frac{g(x)}{3} \rightarrow \begin{cases} \frac{f(1)}{4} - \frac{g(1)}{3} = \frac{2\sqrt{2}}{4} - \frac{\sqrt{2}}{3} = 0 \\ \frac{f(-1)}{4} - \frac{g(-1)}{3} = \frac{\sqrt{2}}{4} - \frac{-\sqrt{2}}{3} = \sqrt{2} \end{cases}$

$\Rightarrow R = [0, \sqrt{2}]$