

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

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

$$2g - 3f \Rightarrow (-1, 2), (0, 5), (1, 4)$$

$$\text{مجموع اعصابی برد} \Rightarrow 2 + 5 + 4 = 11$$

$$f(x) = 2x - 1 \rightarrow R_f = [5, +\infty)$$

$$g(x) = \frac{1}{2}x + 2 \rightarrow R_g = (-\infty, 4]$$

$$R_f \cup R_g = \mathbb{R} - (4, 5)$$

$$y = -\frac{x^2}{2} + x + 3 \Rightarrow -\frac{x^2}{2} + x + 3 \geq \frac{3}{2} \Rightarrow -x^2 + 2x + 4 \geq 3$$

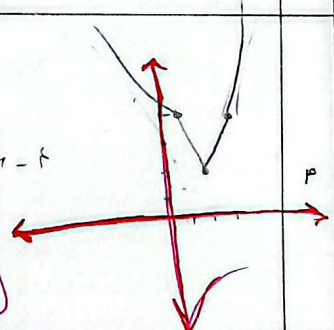
$$x^2 - 2x - 1 \leq 0 \quad \begin{array}{l} a = -1 \\ b = 3 \end{array} \quad \sqrt{3 - (-1)} = \sqrt{4} = 2$$

$$\begin{array}{c} x^2 - 2x - 1 \\ (x-3)(x+1) \\ -1 \quad 3 \\ + \quad - \quad + \end{array}$$

$$y = |x-1| + |x-3| + |2x-4|$$

$$\begin{array}{l} 1-x+3-x+4-2x \quad | \quad x-1+3-x-2x+4 \quad | \quad x-1+3-x+2x-4 \quad | \quad x-1+x-3+2x-4 \\ (-4x+8) \quad (-2x+6) \quad (2x-2) \quad (5x-1) \\ \textcircled{4} \quad \textcircled{2} \quad \textcircled{4} \end{array}$$

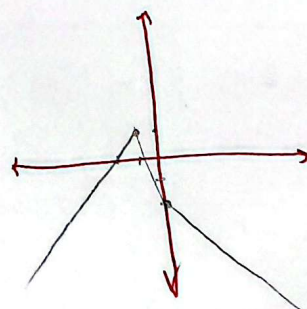
$$R_f = [2, +\infty)$$



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

$$\begin{array}{l} -x+2x+1 \quad | \quad -x-2x-2 \quad | \quad x-2x-2 \\ (x+1) \quad (-3x-2) \quad (-x-2) \\ \textcircled{1} \quad \textcircled{-2} \end{array}$$

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



$$y = \frac{x^2 + 5x + m}{x+1} \Rightarrow y(x+1) = x^2 + 5x + m$$

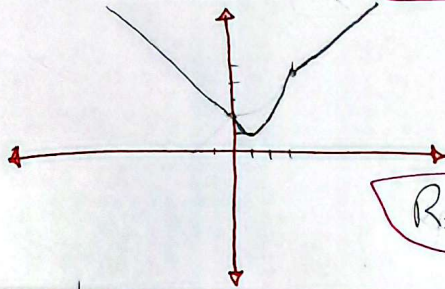
$$x^2 + (5-y)x + (m-y) = 0 \Rightarrow x = \frac{y-5 \pm \sqrt{(5-y)^2 - 4(m-y)}}{2}$$

$$y^2 - 10y + 25 - 4m + 4y = 0 \Rightarrow \Delta' \leq 0 \Rightarrow 34 - 10y + 4m \leq 0$$

$$14m \leq 10y - 34$$

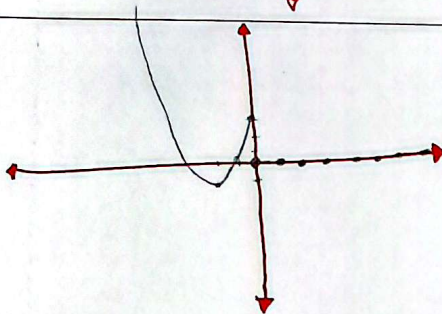
اگر m بگذاریم با
 خروج ساده شود
 با $m=1$ عبارت را می توانیم

$m = \{1, 2, 3\}$ ۳ عدد طبیعی



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

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



$$f(x) = \begin{cases} x^2 + 4x + 2 & x \leq 0 \\ [2x] - 2x & x > 0 \end{cases}$$

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

$$y = a+1 - \sqrt{2x+3}$$

$$x = -\frac{3}{2} \Rightarrow a+1 = 0 \Rightarrow a = -1$$

$$b = -\frac{3}{2}$$

$$ab = -\frac{9}{2}$$

$$f(x) = 2\sqrt{x+1} + \sqrt{1-x} \Rightarrow \begin{cases} x \leq 1 \\ x \geq -1 \end{cases} \Rightarrow -1 \leq x \leq 1$$

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

$$D_f = D_g \quad f(0) = 1 \quad f(1) + g(1) = 2 \Rightarrow g(1) = 1$$

$$f(-1) = 1 \quad f(-1) + g(-1) = 2 \Rightarrow g(-1) = 1$$

$$y = \frac{f(x) - 2g(x)}{4}$$

$$\max \frac{\sqrt{2} + 2\sqrt{2}}{4} = \sqrt{2}$$

$$\min \frac{\sqrt{2} - 2\sqrt{2}}{4} = -\frac{\sqrt{2}}{2}$$

$$R_f = [-\frac{\sqrt{2}}{2}, \sqrt{2}]$$