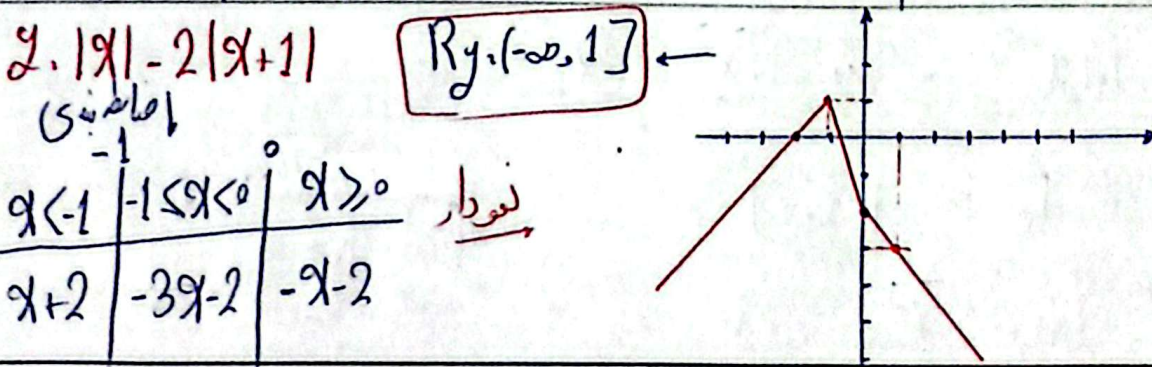
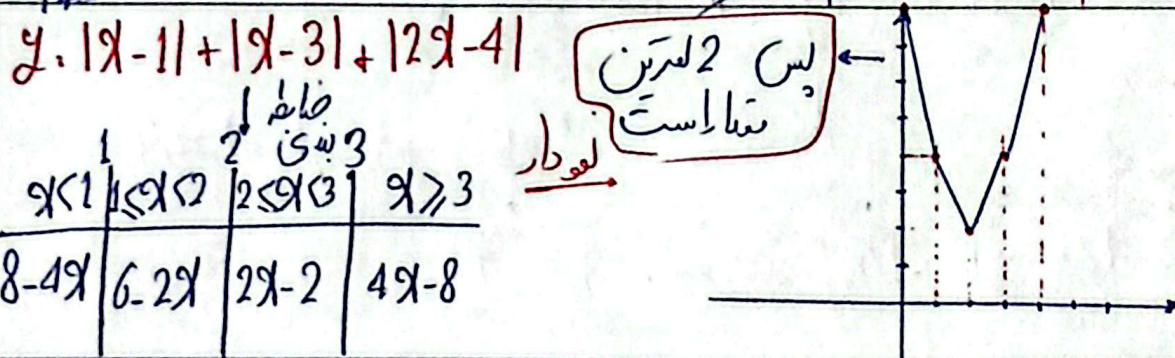
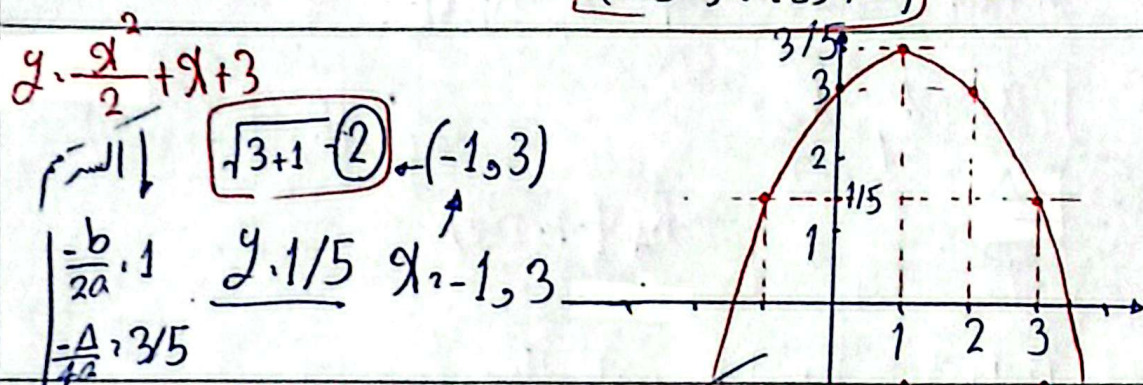


۱. $f(x) = \sqrt{1-x^2}$ $g(x) = 2x - 3f(x)$ $R_g = \{2, 4, 5\}$
 $D_f = [-1, 1] \rightarrow 1 \geq x^2 \rightarrow -1 \leq x \leq 1$
 $D_g = \{-1, 0, 2, 1\}$ $\begin{cases} 1: 4 - 3(0) = 4 \\ 0: 2(4) - 3(1) = 5 \\ -1: 2 - 3(0) = 2 \end{cases}$

۲. $f(x) = 2x - 1 \rightarrow D_f = [3, +\infty)$ $g(x) = \frac{x+3}{x-3}$ $R_f = [5, +\infty)$

$g(x) = \frac{1}{3}x + 3 \rightarrow D_g = (-\infty, 3]$ $R_g = (-\infty, 4]$
 $(-\infty, 4] \cup [5, +\infty)$



$$y, \frac{x^2 + 5x + m}{x+1}$$

$$16 - 4m > 0 \rightarrow$$

$$m \leq 4$$

$$[-4]$$

$$m \Rightarrow 1, 2, 3, 4$$

$$2x + y, \frac{x^2 + 5x + m}{x+1} \rightarrow x^2 + (5-y)x + m - y \cdot 0 \xrightarrow{\Delta \geq 0} (5-y)^2 - 4m + 4y \geq 0$$

$$\left[\frac{64 - 16m}{4} \geq 0 \leftarrow \frac{\Delta}{4a} \geq 0 \leftarrow y^2 - 6y + 25 - 4m \geq 0 \right]$$

$$f(x) \begin{cases} A, x+2 : x \geq 3 & x \in R_A = [5, +\infty) \\ B, x^2 - 2x + 2 : 0 \leq x < 3 & x \in R_B = [1, 5) \\ C, |x| + 2 : x < 0 & x \in R_C = (-2, +\infty) \end{cases} \cup [1, +\infty) \quad R_f$$

$$f(x) \begin{cases} A, x^2 + 4x + 3 : x \leq 0 \\ B, [2x] - 2x : x \geq 0 \end{cases} \begin{matrix} R_A = [-1, +\infty) \\ R_B = (-1, 0] \end{matrix} \cup R_f = [-1, +\infty)$$

$$A \xrightarrow{\text{المنحني}} \begin{cases} -\frac{b}{2a} = \frac{-4}{2} = -2 \\ -\frac{\Delta}{4a} = \frac{-(16-12)}{4} = -1 \end{cases} \rightarrow R_A = [-1, +\infty)$$

$$y, a+1 - \sqrt{2x+3} \quad P_y, [b, +\infty), R_y, (-\infty, 5]$$

$$2x \geq -3 \rightarrow x \geq -1/5 \rightarrow [b, 1/5] \quad x = -1/5 \rightarrow y, a+1 = 5 \rightarrow [a, 4] \quad \begin{matrix} a, b, 4, -1/5 \\ -6 \end{matrix}$$

$$y, \frac{2\sqrt{x+1} + 4\sqrt{1-x} - 6\sqrt{2+2\sqrt{1-x^2}} + 4\sqrt{x+1} + 8\sqrt{1-x}}{6} \rightarrow \sqrt{x+1} + 2\sqrt{1-x} - \sqrt{2-2\sqrt{1-x^2}}$$

$$P_f, P_g = [-1, 1] \quad R_y = [0, 3]$$

$$2(x), 3\sqrt{2+2\sqrt{1-x^2}} - 2\sqrt{x+1} + 4\sqrt{1-x}$$