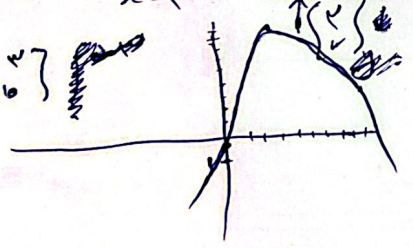
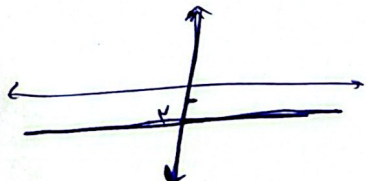


الف) $y = x^2 - 5$ $x^2 = y + 5$ $x = \pm \sqrt{y + 5}$ $R_f = [-5, +\infty)$	ب) $y = x^3 + 1$ $x^3 = y - 1$ $x = \sqrt[3]{y - 1}$ $R_f = \mathbb{R}$	۱
الف) $y^2 = x^2 - 4x + 6$ $y = (x^2 - 4x + 6) + 2$ $y = (x - 2)^2 + 2$ $(x - 2)^2 = y - 2$ $x - 2 = \pm \sqrt{y - 2} \rightarrow x = 2 \pm \sqrt{y - 2}$ $R_f = \{2, +\infty\}$	ب) $y = (x - \frac{5}{2})^2 - \frac{1}{4}$ $(x - \frac{5}{2})^2 = y + \frac{1}{4}$ $x - \frac{5}{2} = \pm \sqrt{y + \frac{1}{4}}$ $x = \pm \sqrt{y + \frac{1}{4}} + \frac{5}{2}$ $R_f = \{-\frac{1}{4}, +\infty\}$	
الف) $yx^2 - 2y = x^2 + 3$ $yx^2 - x^2 = 2y + 3$ $x^2(y - 1) = 2y + 3 \rightarrow x^2 = \frac{2y + 3}{y - 1}$ $x = \pm \sqrt{\frac{2y + 3}{y - 1}}$ $R_f = (-\infty, -\frac{3}{2}) \cup (2, +\infty)$	ب) $y x - 4y = 2 x + 1$ $y x - 2 x = 4y + 1$ $x (y - 2) = 4y + 1$ $x = \frac{4y + 1}{y - 2}$ $R_f = (-\frac{1}{4}, \frac{1}{2}] \cup (2, +\infty)$	۳
min $\left \begin{array}{l} \frac{-b}{2a} = \frac{f}{2} = 2 \\ 4 - 12 = -8 \end{array} \right.$	$R_f = [-2, +\infty) - \{0, 4\}$ $x^2 - 4x \neq 0$ $x(x - 4) \neq 0$ $x \neq 0, 4$	۴
الف) min $\left \begin{array}{l} \frac{-b}{2a} = \frac{6}{2} = 3 \\ 9 - 12 + 2 = -1 \end{array} \right.$ $R_f = \{-1, +\infty\}$	ب) max $\left \begin{array}{l} \frac{-b}{2a} = \frac{-4}{-2} = 2 \\ -4 + 8 + 2 = 6 \end{array} \right.$ $R_f = (-\infty, 6]$	۵

الف) $\min \left \begin{array}{l} \frac{-b}{2a} = \frac{+2}{2} = 1 \\ 9 - 18 + 2 = -7 \end{array} \right $ $R_f = \sqrt{[-7, +\infty)} = [0, +\infty)$	ب) $\max \left \begin{array}{l} \frac{-b}{2a} = \frac{-2}{-2} = 1 \\ -2 + 1 + 10 = 9 \end{array} \right $ $R_f = \sqrt{[-9, 14]} = [0, \sqrt{14}]$	6
الف) $R_f = \mathbb{R}$	ب) $R_f = [0, +\infty)$	7
الف) $R_f = \mathbb{R} - \left\{ \frac{3}{1} \right\}$ $R_f = \mathbb{R} - \{3\}$	ب) $R_f = \mathbb{R} - \{\sqrt{4}\}$ $R_f = \mathbb{R} - \{2\}$	8
الف) $y = \frac{3x+1}{x-2}$ نقطه $x=2$  $\left\{ \frac{1}{2} \right\} \left\{ \frac{3}{2} \right\} \left\{ \frac{5}{2} \right\}$	ب) $y = \frac{2(2x-1)}{1-x} = -2$ 	9
الف) $R_f = [2, +\infty)$ (محلوس به پیرنه) $y = \cos^2 x + \frac{1}{\cos^2 x}$	ب) $y = \sqrt{x + \frac{1}{x}}$ $R_f = \mathbb{R}$ (تا بیغ فرجه است)	10