

تالیف ۹ / دهم دفتر

آیسا علیاری

$$\text{الف) } x^2 = y + 5 \rightarrow x = \pm \sqrt{y+5} \rightarrow y \geq -5 \quad R_f = [-5, +\infty) \quad (1)$$

$$\text{ب) } x^3 = y - 1 \rightarrow x = \sqrt[3]{y-1} \rightarrow R_f = \mathbb{R}$$

$$\text{الف) } y = x^2 + 4x + 2 - 4x \rightarrow y = (x-2)^2 + 2 \rightarrow y-2 = (x-2)^2 \rightarrow x-2 = \pm \sqrt{y-2} \quad (2)$$

$$y \geq 2 \quad R_f = [2, +\infty)$$

$$\text{ب) } y = (x^2 - 5x + \frac{25}{4}) - \frac{25}{4} + 1 \rightarrow (x - \frac{5}{2})^2 - \frac{25}{4} + 1 \rightarrow x - \frac{5}{2} = \pm \sqrt{y + \frac{21}{4}}$$

$$y \geq -\frac{21}{4} \quad R_f = [-\frac{21}{4}, +\infty)$$

$$\text{الف) } yx^2 - 2y = x^2 + 3 \rightarrow yx^2 - x^2 = 2y + 3 \rightarrow x^2(y-1) = 2y+3 \rightarrow x = \pm \sqrt{\frac{2y+3}{y-1}} \quad (3)$$

$$\frac{2y+3}{y-1} \geq 0 \rightarrow \frac{-\frac{3}{2}}{+\frac{1}{2}} - \frac{1}{0} \rightarrow R_f = (-\infty, -\frac{3}{2}] \cup (1, +\infty)$$

$$\text{ب) } y|x| - 4y = 2|x| + 1 \rightarrow y|x| - 2|x| = 1 + 4y \rightarrow |x|(y-2) = 1+4y \rightarrow |x| = \frac{1+4y}{y-2}$$

$$\frac{1+4y}{y-2} \geq 0 \rightarrow \frac{-\frac{1}{4}}{+\frac{1}{2}} - \frac{2}{0} \rightarrow R_f = (-\infty, -\frac{1}{4}] \cup (2, +\infty)$$

$$x^2y - 4xy - 1 = 0 \rightarrow \Delta = b^2 - 4ac = 16y + 4y \geq 0 \rightarrow 4y(4y+1) \geq 0 \quad (4)$$

$$\frac{-\frac{1}{4}}{+\frac{1}{2}} - \frac{0}{+\frac{1}{2}} \rightarrow R_f = (-\infty, -\frac{1}{4}] \cup [0, +\infty)$$

$$\text{الف) } x^2 - 4x + 2 \rightarrow a > 0 \quad y_{\max} \left| \begin{array}{l} \text{ext} = -\frac{b}{2a} = 2 \\ \mathcal{E} \rightarrow -\infty \end{array} \right. \quad R_f = [-\infty, +\infty) \quad (5)$$

$$\text{ب) } -x^2 + 4x + 2 \rightarrow a < 0 \quad y_{\min} \left| \begin{array}{l} \text{ext} = -\frac{b}{2a} = 2 \\ \mathcal{E} \rightarrow +\infty \end{array} \right. \quad R_f = (-\infty, 4]$$

$$\text{الف) } a > 0 \quad y_{\max} \left| \begin{array}{l} \text{ext} = -\frac{b}{2a} = 2 \\ \mathcal{E} \rightarrow -\infty \end{array} \right. \quad R_f = [0, +\infty) \quad (6)$$

$$\text{ب) } a < 0 \quad y_{\min} \left| \begin{array}{l} \text{ext} = -\frac{b}{2a} = 2 \\ \mathcal{E} \rightarrow +\infty \end{array} \right. \quad R_f = [0, \sqrt{14}]$$

الف) $R_f = \mathbb{R}$

ب) $R_f = [0, +\infty)$

(7)

الف) $R_f = \mathbb{R} - \{3\}$

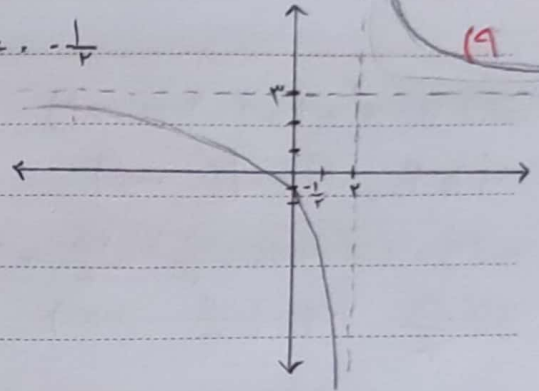
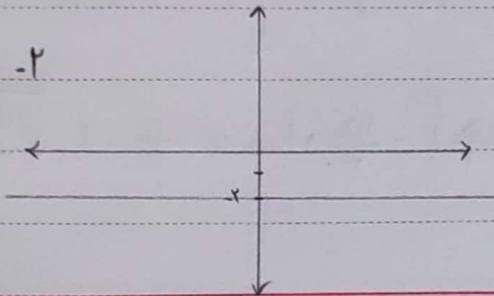
ب) $R_f = [0, +\infty) - \{1\}$

(8)

الف) معادلات أفقية : $\frac{a}{c} = 3$ / معادلات عمودية : $2 =$ ريشة مفرج : $-\frac{1}{4}$ عرضاً مبدئياً

(9)

ب) $y = \frac{f(x) - 2}{-2x + 1} = -2$



الف) $[2, +\infty)$

ب) $(-\infty, -2] \cup [2, +\infty)$

(10)