

ساده و تکلیف ۹ ←

الف) $y = x^2 - 5$ $x^2 = y + 5 \rightarrow x = \pm \sqrt{y+5}$ $y+5 \geq 0 \rightarrow y \geq -5$ $R_f \rightarrow [-5, +\infty)$

ب) $y = x^2 + 1$ $x^2 = y - 1 \rightarrow x = \pm \sqrt{y-1} \rightarrow R_f = \mathbb{R}$

الف) $y = x^2 - 4x + 6 \rightarrow x^2 - 4x + 2 = y$ $(x-2)^2 + 2 = y \rightarrow (x-2)^2 = y-2 \rightarrow x-2 = \pm \sqrt{y-2}$ $x = \pm \sqrt{y-2} + 2$ $R_f = [2, +\infty)$

ب) $y = x^2 - 5x + 1 \rightarrow x^2 - 5x + 1 - y = 0$ $\Delta = 25 - 4(1-y) \rightarrow 25 - 4 + 4y \geq 0 \rightarrow 21 + 4y \geq 0 \rightarrow y \geq -\frac{21}{4}$ $R = [-\frac{21}{4}, +\infty)$

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

ب) $y = \frac{|x|+1}{|x|-4}$ $y(|x|-4) = |x|+1 \rightarrow y|x| - 4y = |x|+1 \rightarrow y|x| - |x| = 1+4y \rightarrow |x|(y-1) = 1+4y \rightarrow |x| = \frac{1+4y}{y-1}$ $R_f = (-\infty, -\frac{1}{4}] \cup (\frac{1}{4}, +\infty)$

$y = \frac{1}{x^2-4x} \rightarrow yx^2 - 4xy = 1 \rightarrow yx^2 - 4xy - 1 = 0 \rightarrow \Delta = 16y^2 - 4(-1)(y) \rightarrow 16y^2 + 4y \geq 0$ $R_f = (-\infty, -\frac{1}{4}] \cup (0, +\infty)$

الف) $y = x^2 - 6x + 2 \rightarrow \min_{x \in \mathbb{R}} \rightarrow \left[\frac{-b}{2a} \right] = \left[\frac{3}{1} \right] = [3] \rightarrow R_f = [-1, +\infty)$

ب) $y = -x^2 + 4x + 2 \rightarrow \max_{x \in \mathbb{R}} \rightarrow \left[\frac{-b}{2a} \right] = \left[\frac{2}{-1} \right] = [-2] \rightarrow (-\infty, 4]$

الف) $y = \sqrt{x^2 - 6x + 2}$ $\min_{x \in \mathbb{R}} \rightarrow \left[\frac{-b}{2a} \right] = \left[\frac{3}{1} \right] = [3] \rightarrow R_f = \sqrt{[-1, +\infty)} \rightarrow R_f = [0, +\infty)$

ب) $y = \sqrt{-x^2 + 4x + 1}$ $\max_{x \in \mathbb{R}} \rightarrow \left[\frac{-b}{2a} \right] = \left[\frac{2}{-1} \right] = [-2] \rightarrow R_f = \sqrt{[-\infty, 4]} \rightarrow R_f = [0, \sqrt{4}]$

الف) $y = x^4 + 3x^2 + 2x + 1 \rightarrow R_f = \mathbb{R}$

ب) $y = \sqrt{x^4 + 4x^2 + 6x + 1} \rightarrow R_f = \sqrt{\mathbb{R}} \rightarrow R_f = [0, +\infty)$

الف) $y = \frac{3x+1}{x-2} \rightarrow R_f = \mathbb{R} - \left\{ \frac{a}{c} \right\} \rightarrow R_f = \mathbb{R} - \left\{ \frac{1}{2} \right\}$

ب) $y = \sqrt{\frac{4x+1}{x+3}} \rightarrow R_f = \mathbb{R} - \left\{ \frac{a}{c} \right\} \rightarrow R_f = [0, +\infty) - \left\{ \frac{1}{3} \right\}$

(9)

$$\text{الف) } y = \frac{3x+1}{x-2}$$

$$\rightarrow \text{بجانب نام} \rightarrow x-2 \neq 0 \rightarrow x \neq 2$$

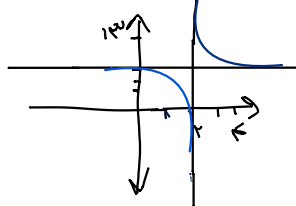
$$\rightarrow \text{بجانب انفی} \rightarrow \frac{a}{c} \rightarrow 3$$

$$\left[\frac{3}{13} \right] \text{ نقطه کنگی}$$

$$ad=bc \quad y, 2 \text{ (13)}$$

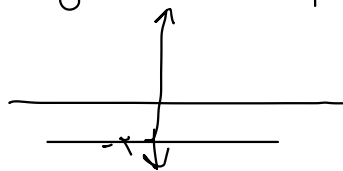
$$\leftarrow 3 \propto \frac{-(-1+2+2)}{-(-1+2+2)}$$

$$-2(-2) = 4(1)$$



$$R_f = \mathbb{R} - \{3\}$$

$$\rightarrow y = -2 \rightarrow R_f = \{-2\}$$



$$\text{ب) } y = \frac{4x-2}{1-2x}$$

تابع معکوس است

نیت

(10)

$$\text{الف) } y = \cos^2 x + \frac{1}{\cos^2 x} \rightarrow a^2 + \frac{1}{a^2} \rightarrow R_f = [2, +\infty)$$

$$\text{ب) } y = \sqrt{\frac{x^2+1}{x}} \rightarrow y, \sqrt{x+\frac{1}{x}} \rightarrow R_f = (-\infty, -2] \cup [2, +\infty)$$

زهراسمیری