

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

$$y = x^2 + 1 \Rightarrow x^2 = y - 1 \Rightarrow x = \sqrt{y - 1} \Rightarrow R_f = R$$

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

$$\text{ب)} y = x^2 - 5x + 1 \Rightarrow \left(\frac{y}{x} - \frac{5}{2}\right)^2 - \frac{21}{4} \Rightarrow x = \sqrt{y + \frac{21}{4}} + \frac{5}{2} \Rightarrow R_f = \left[-\frac{21}{4}, \infty\right)$$

$$\text{الف)} y = \frac{x^2 + 3}{x^2 - 2} \Rightarrow yx^2 - 2y = x^2 + 3 \Rightarrow yx^2 - x^2 = 2y + 3 \Rightarrow x^2(y - 1) = 2y + 3$$

$$x^2 = \frac{2y + 3}{y - 1} \Rightarrow x = \sqrt{\frac{2y + 3}{y - 1}}$$

$R_f = (-\infty, -\frac{3}{2}] \cup (1, \infty)$

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

$$|x| = \frac{4y + 1}{y - 2} \Rightarrow R_f = (-\infty, -\frac{1}{2}] \cup (2, \infty)$$

$$\text{الف)} x^2 - 6x + 2 \Rightarrow R_f = [-7, \infty)$$

$$\frac{-b}{2a} = 3 \quad 9 - 12 + 2 = -7 = y_{\min}$$

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$$\text{ب)} -x^2 + 4x + 2 \Rightarrow R_f = (-\infty, 7]$$

$$\frac{-b}{2a} = \frac{4}{-2} = -2 \quad y_{\max} = -1 + 4 + 2 = 7$$

$$\text{الف)} \sqrt{x^2 - 6x + 2} \quad \sqrt{[-7, \infty)} \Rightarrow R_f = [0, \infty)$$

$$\frac{-b}{2a} = \frac{6}{2} = 3 \quad y_{\min} = 9 - 12 + 2 = -7$$

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$$\text{ب)} \sqrt{-x^2 + 4x + 10} \Rightarrow \sqrt{[-\infty, 11]} \Rightarrow R_f = [0, \sqrt{11}]$$

$$-b = 4 \quad y_{\max} = -1 + 4 + 10 = 14$$

$y = \frac{1}{x^r - rx} \Rightarrow x^r y - rx y = 1 \Rightarrow x^r - rx y - 1$ ((4 سوال جواب))
 $\Delta = 14y^r - ry > 0 \Rightarrow ry(ry-1) > 0 \Rightarrow \frac{1}{r} < y < \frac{1}{r} \Rightarrow R_f = (-\infty, 0] \cup [\frac{1}{r}, \infty)$
 $y < \frac{1}{r}$

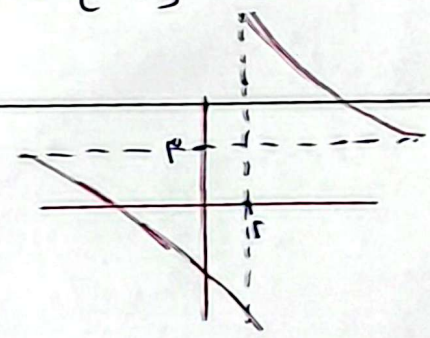
الف) $x^r + rx^r + rx + 1 \quad R_f = R$

ب) $\sqrt{x^r + rx^r + rx + 1} \quad R_f = [0, \infty)$

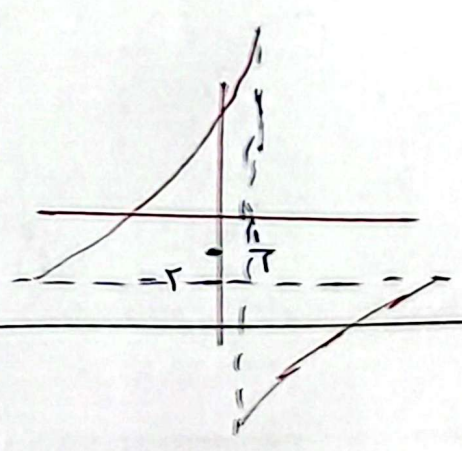
الف) $y = \frac{rx+1}{x-r} \quad R - \{\frac{r}{c}\} = R_f = R - \{r\}$

ب) $y = \frac{rx-r}{1-rx} \Rightarrow R_f = R - \{-r\}$

الف) $y = \frac{rx+1}{x-r}$
 عمودی = r جانب افقی = $\frac{a}{c} = r$



ب) $y = \frac{rx-r}{1-rx} \Rightarrow$
 عمودی = $\frac{1}{r}$ افقی = $-r$



الف) $y = \frac{\cos^r x}{\cos^r x} + \frac{1}{\cos^r x} \Rightarrow R_f = [r, \infty)$

ب) $\sqrt{\frac{x^r+1}{x}} \Rightarrow \sqrt{x + \frac{1}{x}} \Rightarrow \sqrt{(\infty, 0] \cup [r, \infty)}$
 $R_f = (-\infty, -\sqrt{r}] \cup [\sqrt{r}, \infty)$