

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

①

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

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

②

$x = \pm\sqrt{y-2} - 2 \rightarrow y-2 \geq 0$
 $y \geq 2$

$R_f = [2, +\infty)$

ب) $y = (x - \frac{1}{2})^2 - \frac{1}{4}$

$(x - \frac{1}{2})^2 = y + \frac{1}{4}$

$x - \frac{1}{2} = \pm\sqrt{y + \frac{1}{4}} + \frac{1}{2} \rightarrow y + \frac{1}{4} \geq 0$
 $y \geq -\frac{1}{4}$

$R_f = [-\frac{1}{4}, +\infty)$

الف) $y x^2 - 7y = x^2 + 3$

③

$y x^2 - x^2 = 7y + 3$

$x^2 (y-1) = 7y + 3$

$x^2 = \frac{7y+3}{y-1} \quad x = \pm\sqrt{\frac{7y+3}{y-1}}$

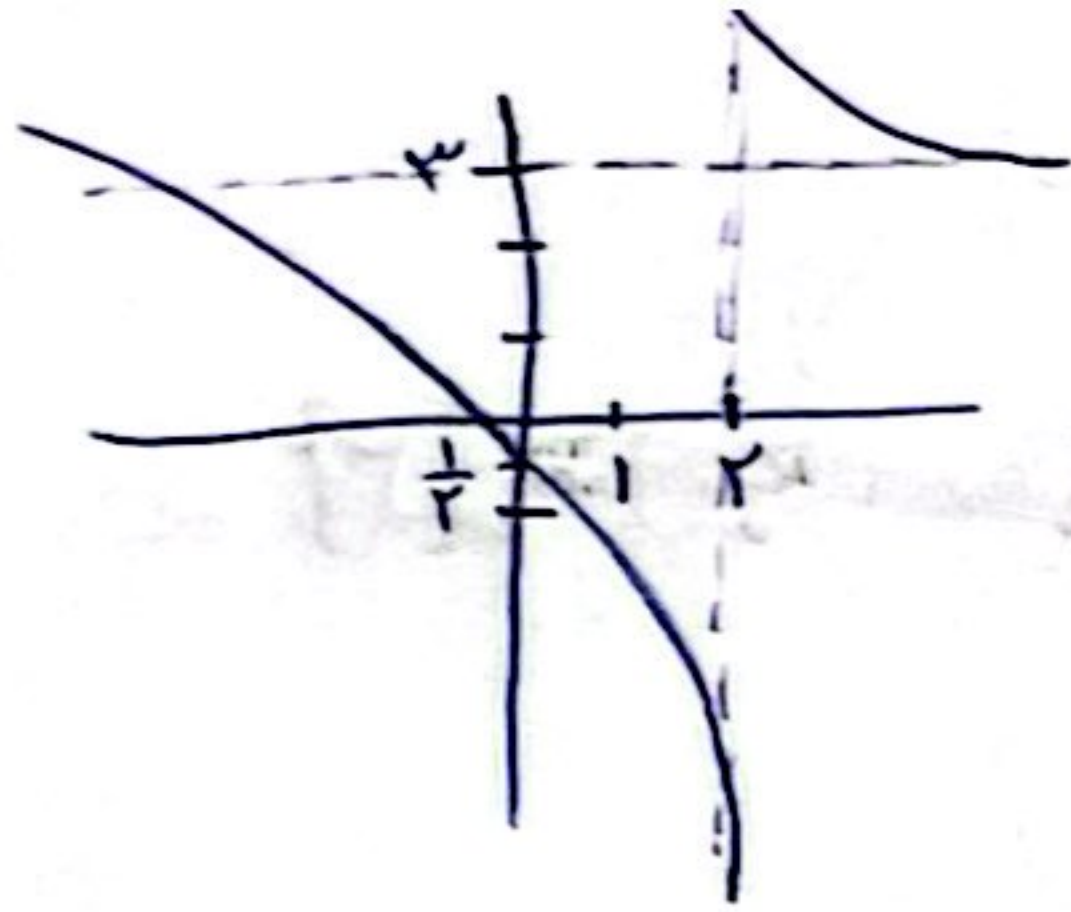
$\frac{-\frac{3}{7}}{+} \quad \frac{1}{-}$
 $\frac{7y+3}{y-1} \geq 0$
 $x^2 = \frac{7y+3}{y-1}$

$R_f = (-\infty, -\frac{3}{7}] \cup (1, +\infty)$

الف) $x - 2 = 0$ $x = 2$ = رستہ خارج = جانب قائم (الف)

جانب امتی = $\frac{9}{x} = 3$

$x = 0 = -\frac{1}{2}$



ممکنہ امتزاس سے $ad = bc$ ایسا وی $ad \neq bc$ $x =$ جانب قائم (ب) $x =$ امتی

الف) $R_f = [2, +\infty)$

ب) $\sqrt{\frac{x^2}{x} + \frac{1}{2}} = \sqrt{x + \frac{1}{x}} \rightarrow R_f = [2, +\infty)$

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باران مرادی

$$y|x| - fy = r|x| + 1$$

$$y|x| - r|x| = fy + 1$$

$$|x|(y-r) = fy + 1$$

$$|x| = \frac{fy+1}{y-r}$$

$$\frac{-\frac{1}{f}}{+\frac{1}{f} - \frac{r}{y-r}}$$

$$R_f = (-\infty, -1] \cup [\frac{1}{f}, +\infty)$$

(ع)

$$y = \frac{1}{x^2 - fx} \rightarrow \left(\frac{1}{y} = x^2 - fx\right)^{+f}$$

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

$$x-r = \pm \sqrt{f + \frac{1}{y}}$$

$$x = \pm \sqrt{f + \frac{1}{y}} + r$$

$$R_f = [-\frac{1}{f}, +\infty) \cup$$

$$f + \frac{1}{y} \geq 0$$

$$\frac{1}{y} \geq -f \quad -\frac{1}{f} \leq y$$

$$\frac{x^2 - 9x + 2}{\min}$$

$$\left| \begin{array}{l} -\frac{b}{2a} = \frac{9}{2} = 4.5 \\ 9 - 1 \times 4.5 = -0.5 \end{array} \right.$$

$$R_f = [-4.5, +\infty)$$

(د)

(الف)

$$\frac{-x^2 + 6x + 2}{\max}$$

$$\left| \begin{array}{l} -\frac{b}{2a} = \frac{-6}{-2} = 3 \\ -1 \times 9 + 6 \times 3 + 2 = 5 \end{array} \right.$$

$$R_f = (-\infty, 5]$$

(ب)

$$\text{الف) } \frac{\sqrt{x^2 - 9x + 2}}{\min}$$

$$\left| \begin{array}{l} -\frac{b}{2a} = \frac{9}{2} = 4.5 \\ 9 - 1 \times 4.5 = -0.5 \end{array} \right.$$

$$R_f = \sqrt{[-4.5, +\infty)} = [0, +\infty)$$

(ج)

$$\text{ب) } \frac{\sqrt{-x^2 + 6x + 10}}{\max}$$

$$\left| \begin{array}{l} -\frac{b}{2a} = \frac{-6}{-2} = 3 \\ -1 \times 9 + 6 \times 3 + 10 = 15 \end{array} \right.$$

$$R_f = \sqrt{(-\infty, 15]} = [0, 15]$$

$$\text{الف) } R_f = R$$

(د)

$$\text{ب) } R_f = \sqrt{R} = [0, +\infty)$$

$$\text{الف) } R_f = R - \{3\}$$

(ه)

$$\text{ب) } R_f = \sqrt{R - \{4\}} = [0, +\infty) - \{2\}$$