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باسمہ تعالیٰ تشریحی تکلیف شماره 9 کلاس 9م

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

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

الف) $x^2 - 4x + 4 + 2 = (x-2)^2 = y - 2$ $x = \pm \sqrt{y-2} + 2$ $y-2 \geq 0$ $\Rightarrow R_f = [2, +\infty)$

$y = x^2 - 4x + 4$

$y + 0, 20 = x^2 - 4x + 4 + 0, 20 \Rightarrow y + 0, 20 = (x-2)^2 \Rightarrow x-2 = \pm \sqrt{y+0, 20} \Rightarrow x = \pm \sqrt{y+0, 20} + 2$ $0, 20 + y \geq 0$ $y \geq -0, 20$ $R_f = [-0, 20, +\infty)$

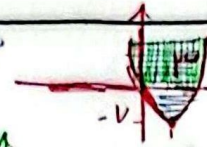
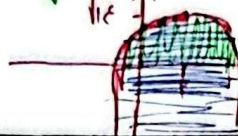
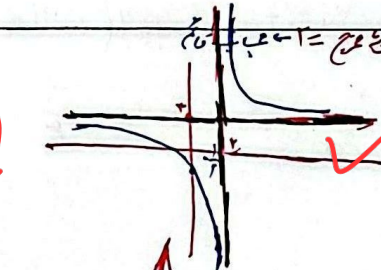
الف) $x^2 - y = x^2 + 3$ $x^2(y-1) = y+3$ $x^2 = \frac{y+3}{y-1}$ $\frac{y}{-1} = -y$ $\frac{3}{-1} = -3$ $\frac{y+3}{y-1} \geq 0$ $\Rightarrow R_f = (-\infty, -3] \cup (1, +\infty)$

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

$y = \frac{1}{x^2 - 4x}$ $\Rightarrow x^2 - 4x = \frac{1}{y} \Rightarrow x^2 - 4x + 4 = \frac{1}{y} + 4$ $(x-2)^2 = \frac{1}{y} + 4$ $x-2 = \pm \sqrt{\frac{1}{y} + 4}$ $x = \pm \sqrt{\frac{1}{y} + 4} + 2$ $\frac{1}{y} + 4 \geq 0 \Rightarrow \frac{1+4y}{y} \geq 0$ $\frac{1}{-1} = -1$ $\frac{4}{-1} = -4$ $\frac{1+4y}{y} \geq 0$ $\Rightarrow R_f = (-\infty, -\frac{1}{4}] \cup (0, +\infty)$

الف) $\text{ext} \mid \frac{b}{4a} = \frac{-7}{-1} = 7$ $\text{Min} \mid -7$ $R_f = [-7, +\infty)$

ب) $\text{ext} \mid \frac{b}{4a} = \frac{-4}{-1} = 4$ $\text{Max} \mid 4$ $R_f = (-\infty, 4]$

$y = \sqrt{x^2 - 6x + 2}$ $\text{ext} \begin{cases} \text{Max} \\ \text{Min} \end{cases} \left \begin{array}{l} \frac{-b}{2a} = 3 \\ -7 \end{array} \right.$  $R_f = [0, +\infty)$ (الف)	6
به دلیل وجود رادیکال بازه زوج من باشد بازه زوج از 0 باشد یا مساوی $y = \sqrt{-x^2 + 6x + 1}$ $\text{ext} \begin{cases} \text{Max} \\ \text{Min} \end{cases} \left \begin{array}{l} \frac{-b}{2a} = 3 \\ \sqrt{10} \end{array} \right.$  $R_f = [0, \sqrt{10}]$ (ب)	7
$y = \sqrt{x^4 + 2x^2 + 2x + 1}$ $R_f = \mathbb{R} - \mathbb{R}^- = [0, +\infty)$ (الف)	8
$y = \frac{2x+1}{x-2}$ $R_f = \mathbb{R} - \{2\}$ (الف)	9
$y = \sqrt{\frac{2x+1}{x+3}}$ $R_f = \mathbb{R} - \sqrt{\frac{2}{3}} = \mathbb{R}^+ - \sqrt{\frac{2}{3}}$ (الف)	10
$y = \frac{2x+1}{x-2}$ $\frac{dy}{dx} = 3$ $\frac{dx}{dy} = \frac{1}{3}$ $y = \frac{2x-2}{1-2x} = \frac{2x-2}{-(2x-1)} = -\frac{2}{2x-1}$ $a \neq \frac{1}{2}$ 	11
$y = \cos^2 x + \frac{1}{\cos^2 x}$ $\Rightarrow R_f = (-\infty, -2] \cup [2, +\infty)$ $R_f = [2, +\infty)$ (الف)	12
$y = \sqrt{\frac{x+1}{x}} = \sqrt{x + \frac{1}{x}}$ $\Rightarrow R_f = (-\infty, \sqrt{2}] \cup [\sqrt{2}, +\infty)$ (الف)	13