

۱۹,۲۵

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره ۹ کلاس دوم دبیرستان

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

$$y = x^3 + 1 \Rightarrow x^3 = y - 1 \Rightarrow x = \sqrt[3]{y-1} \quad R_f = \mathbb{R}$$

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

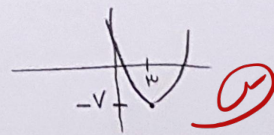
$$y = x^2 - 5x + 1 \Rightarrow y = (x - \frac{5}{2})^2 - \frac{21}{4} \Rightarrow y + \frac{21}{4} = (x - \frac{5}{2})^2 \Rightarrow x - \frac{5}{2} = \pm \sqrt{y + \frac{21}{4}} \\ x = \pm \sqrt{y + \frac{21}{4}} + \frac{5}{2} \quad y + \frac{21}{4} \geq 0 \quad y \geq -\frac{21}{4} \quad R_f = [-\frac{21}{4}, +\infty)$$

$$y = \frac{x^2+3}{x^2-2} \quad yx^2 - 2y = x^2 + 3 \Rightarrow yx^2 - x^2 = 3 + 2y \Rightarrow x^2(y-1) = 3+2y \Rightarrow \\ x^2 = \frac{3+2y}{y-1} \Rightarrow x = \sqrt{\frac{3+2y}{y-1}} \quad \begin{matrix} -\frac{3}{y-1} \geq 0 \\ +\frac{3}{y-1} \geq 0 \end{matrix} \quad R_f = (-\infty, -\frac{3}{2}] \cup (1, +\infty)$$

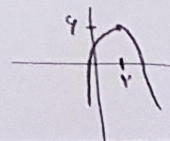
$$y = \frac{2|x|+1}{|x|-4} \quad y|x| - 4y = 2|x|+1 \Rightarrow y|x| - 2|x| = 1+4y \Rightarrow |x|(y-2) = 1+4y \Rightarrow \\ |x| = \frac{1+4y}{y-2} \quad \begin{matrix} -\frac{1}{y-2} \geq 0 \\ +\frac{1}{y-2} \geq 0 \end{matrix} \quad R_f = (-\infty, -\frac{1}{2}] \cup (2, +\infty)$$

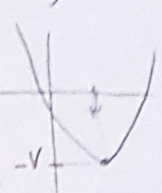
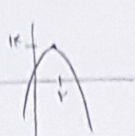
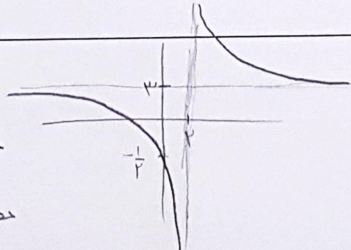
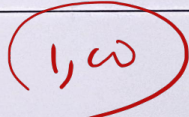
$$y = \frac{1}{x^2-4x} \Rightarrow y = \frac{1}{(x-2)^2-4} \Rightarrow (x-2)^2 y - 4y = 1 \Rightarrow y((x-2)^2-4) = 1 \Rightarrow \\ (x-2)^2-4 = \frac{1}{y} \Rightarrow (x-2)^2 = \frac{1}{y} + 4 \Rightarrow (x-2)^2 = \frac{1+4y}{y} \Rightarrow \frac{1+4y}{y} \geq 0 \\ \begin{matrix} -\frac{1}{y} \geq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

$$y = x^2 - 4x + 2 \quad \frac{-b}{2a} = \frac{4}{2} = 2 \Rightarrow y = -2 \\ \min \Rightarrow [-2, +\infty)$$



$$y = -x^2 + 4x + 2 \quad \frac{-b}{2a} = \frac{-4}{-2} = 2 \Rightarrow y = 4 \\ \max \Rightarrow (-\infty, 4]$$



$\frac{-b}{1a} = \frac{4}{1} = 4 \quad y = -4 \quad \min \rightarrow [-4, +\infty) \xrightarrow{\text{الحدود}} [0, +\infty)$ $R_f \rightarrow$		٤
$\frac{-b}{1a} = \frac{-4}{-1} = 4 \quad y = 4 \quad \max \rightarrow (-\infty, 4] \xrightarrow{\text{الحدود}} [0, \sqrt{14}]$ $R_f \rightarrow$		٥
$R_f = \mathbb{R} \quad (\text{ا.ت})$		٦
$R_f = [0, +\infty) \quad (\text{ب.})$		٧
$\text{ا.ت} \quad R_f = \mathbb{R} - \{3\}$		٨
$\text{ب.} \quad \mathbb{R} - \{3\} \xrightarrow{\text{الحدود}} R_f = [0, +\infty) - \{2\}$		٩
$y = \frac{x^2 + 1}{2x - 1}$ $x = \frac{1}{2}$ (مخرج) $y = \frac{a}{c} \leftarrow$ (مخرج افقي) $y = \frac{1}{1} = 1$		$R_f = -2$ $y = \frac{x^2 - 1}{1 - 2x}$ $\frac{-1(-x^2 + 1)}{1 - 2x} = -2$ $R_f = \mathbb{R} - \{-2\}$ $1 - 2x \neq 0 \rightarrow x \neq \frac{1}{2}$
$y = \cos^2 x + \frac{1}{\cos^2 x}$	$[2, +\infty) \leftarrow a > 0$	
$y = \sqrt[3]{\frac{x^2 + 1}{x}} \Rightarrow y = \sqrt[3]{\frac{x^2}{x} + \frac{1}{x}} \Rightarrow y = \sqrt[3]{x + \frac{1}{x}}$	$R_f = (-\infty, \sqrt[3]{2}] \cup [\sqrt[3]{2}, +\infty)$ $x > 0 \rightarrow (\sqrt[3]{2}, +\infty)$ $x < 0 \rightarrow (-\infty, \sqrt[3]{-2})$	١٠