

نام و نام خانوادگی شماره کلاس کلاس پاسخنامه تشریحی تکلیف شماره ۹	
الف) $y = x^2 - 5 \rightarrow x^2 = y + 5 \rightarrow x = \pm \sqrt{y+5} \rightarrow y+5 \geq 0 \rightarrow y \geq -5 \rightarrow R = [-5, +\infty)$ ب) $y = x^3 + 1 \xrightarrow{①} R = \mathbb{R}$ $\xrightarrow{②} \sqrt[3]{x^3} = \sqrt[3]{y-1} \rightarrow x = \sqrt[3]{y-1} \rightarrow R = \mathbb{R}$ بهترین زمان نداشت.	۱
الف) $y = x^2 - 4x + 7 \rightarrow x^2 - 4x + 7 - y = 0 \rightarrow x = \frac{4 \pm \sqrt{16 - 4(7-y)}}{2} \rightarrow -16 + 4y \geq 0 \rightarrow 4y \geq 16 \rightarrow y \geq 4$ $L, R = [4, +\infty)$ ب) $y = x^2 - 5x + 1 \rightarrow x^2 - 5x + 1 - y = 0 \rightarrow x = \frac{5 \pm \sqrt{25 - 4(1-y)}}{2} \rightarrow 21 + 4y \geq 0 \rightarrow 4y \geq -21 \rightarrow y \geq -\frac{21}{4}$ $L, R = [-\frac{21}{4}, +\infty)$	۲
الف) $y = \frac{x^2+3}{x^2-2} = y \rightarrow x^2 = -\frac{3y-3}{y-1} \rightarrow x^2 = \frac{3y+3}{y-1} \rightarrow x = \pm \sqrt{\frac{3y+3}{y-1}} \rightarrow \frac{3y+3}{y-1} \geq 0 \rightarrow \frac{3}{y-1} \geq 0 \rightarrow y > 1$ $R = (-\infty, 1) \cup (1, +\infty)$ ب) $\frac{y x +1}{ x -2} = y \rightarrow x = \frac{y+1}{y-2} \rightarrow \frac{y+1}{y-2} \geq 0 \rightarrow \frac{1}{y-2} \geq 0 \rightarrow y > 2$ $R = (-\infty, 2) \cup (2, +\infty)$	۳
$y = \frac{1}{x^2 - 4x} \rightarrow yx^2 - 4yx = 1 \rightarrow \frac{y}{a}x^2 - \frac{4y}{b}x - \frac{1}{c} = 0$ $x = \frac{4y \pm \sqrt{16y^2 + 4y}}{2y} \rightarrow 16y^2 + 4y \geq 0 \rightarrow 4y(4y+1) \geq 0 \rightarrow \frac{1}{y} \geq 0 \rightarrow y > 0$ $R = (-\infty, 0) \cup (0, +\infty)$	۴
الف) $y = x^2 - 4x + 7 \rightarrow \text{Min} \begin{cases} x = x \\ y = -7 \end{cases} \rightarrow R = [-7, +\infty)$ ب) $-x^2 + 4x + 7 = y \rightarrow \text{Max} \begin{cases} x = 2 \\ y = 7 \end{cases} \rightarrow R = (-\infty, 7]$	۵

$$\text{c1) } y = \sqrt{x^2 - 4x + 4} \rightarrow x^2 - 4x + 4 \rightarrow \text{Min} \begin{vmatrix} x = 2 \\ y = -2 \end{vmatrix} \rightarrow \sqrt{R = [-2, +\infty)} \Rightarrow R = [0, +\infty)$$

$$b) y = \sqrt{-x^2 + 16x + 10} \rightarrow -x^2 + 16x + 10 \rightarrow M_{ax} \left| \begin{matrix} x = 8 \\ y = 18 \end{matrix} \right. \rightarrow R = [-\infty, 18] \rightarrow R = [0, 18]$$

الف) $y = x^5 + 3x^4 + 2x + 1 \rightarrow R = \mathbb{R}$

$$\text{b.) } y = \sqrt{x^2 + 4x + 4} \rightarrow x^2 + 4x + 4 \rightarrow R = R \rightarrow R = [0, +\infty)$$

الف) $y = \frac{3x+1}{x-2} \rightarrow R = \mathbb{R} - \{3\}$

$$\text{b.) } y = \sqrt{\frac{x+1}{x+3}} \rightarrow \sqrt{R = \{x\}} \rightarrow R = [0, +\infty) \cup \{x\}$$

ا) $y = \frac{x+1}{x-1}$

$y = 1$
 $x = 1$

$f(x) = \left\{ \left(0, -\frac{1}{e}\right), \left(-\frac{1}{e}, 0\right), \dots \right\}$

$$b) y = \frac{rx - r}{1 - rx} = \frac{rx - r}{-rx + 1} = \frac{r(rx - 1)}{-1(rx - 1)} = -r$$

$$1 \neq \gamma x \rightarrow x \neq \frac{1}{\gamma}$$

$y = \cos^2 x + \frac{1}{\cos^2 x} \rightarrow R = [1, +\infty)$
 لے دو مربع جس سے
 مثبت آئے۔

$$\text{ب) } y = \sqrt[3]{\frac{x^2+1}{x}} = \sqrt[3]{\frac{x^2}{x} + \frac{1}{x}} \rightarrow \sqrt[3]{x + \frac{1}{x}} \rightarrow \begin{matrix} \text{مقادیر مثبت} \\ \text{منفی باشد} \end{matrix} \rightarrow (-\infty, -\frac{1}{2}] \cup [\frac{1}{2}, +\infty)$$

$$x > 0 \rightarrow [\frac{1}{2}, +\infty)$$

$$x < 0 \rightarrow (-\infty, -\frac{1}{2}]$$