

نام و نام خانوادگی علی جمشیدیان ۱۸ پاسخنامه تشریحی تکلیف شماره ۱۰۱ کلاس پسر

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

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

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

ب) $y = x^2 - 2x + 2 + 2 = (x-1)^2 + 2 = y \Rightarrow (x-1)^2 = y-2 \Rightarrow x = \sqrt{y-2} + 1 \Rightarrow y-2 \geq 0 \Rightarrow y \geq 2 \Rightarrow R = [2, +\infty)$

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الف) $y x^2 - 2y = x^2 + 3 \rightarrow (y-1)x^2 = 2y+3 \rightarrow x^2 = \frac{2y+3}{y-1} \rightarrow x = \sqrt{\frac{2y+3}{y-1}} \Rightarrow R = (-\infty, -1] \cup (1, +\infty)$

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

$\hookrightarrow \geq 0 \rightarrow R = (-\infty, -\frac{1}{4}] \cup (2, +\infty)$

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$y x^2 - 4y x = 1 \rightarrow y x^2 - 4y x - 1 = 0 \begin{cases} a=y \\ b=-4y \\ c=-1 \end{cases} \Rightarrow \Delta \geq 0$

$\Delta = (-4y)^2 - 4(y)(-1) \geq 0 \rightarrow 16y^2 + 4y \geq 0 \rightarrow 4y(4y+1) \geq 0 \Rightarrow y \leq -\frac{1}{4} \text{ or } y \geq 0 \Rightarrow R = (-\infty, -\frac{1}{4}] \cup (0, +\infty)$

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الف) $y = x^2 - 6x + 2 \xrightarrow{a>0} \begin{cases} x_{\min} = -\frac{b}{2a} = \frac{3}{1} = 3 \\ y_{\min} = -V \end{cases} \Rightarrow R = [-V, +\infty)$

ب) $y = -x^2 + 4x + 2 \xrightarrow{a<0} \begin{cases} x_{\max} = -\frac{b}{2a} = \frac{2}{-1} = -2 \\ y_{\max} = 4 \end{cases} \Rightarrow R = (-\infty, 4]$

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الف) $y = \sqrt{x^2 - 9x + 2}$ $\alpha > 0 \Rightarrow \begin{cases} x_{\min} = \frac{-b}{2a} = \frac{9}{2} = 4.5 \\ y_{\min} = -\sqrt{2} \end{cases} \Rightarrow R = \sqrt{[4.5, +\infty)} = [0, +\infty)$ ✓

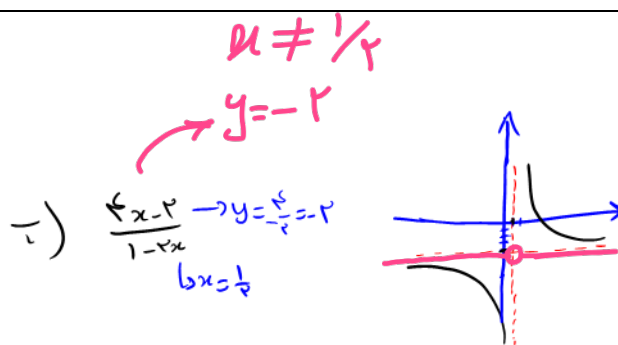
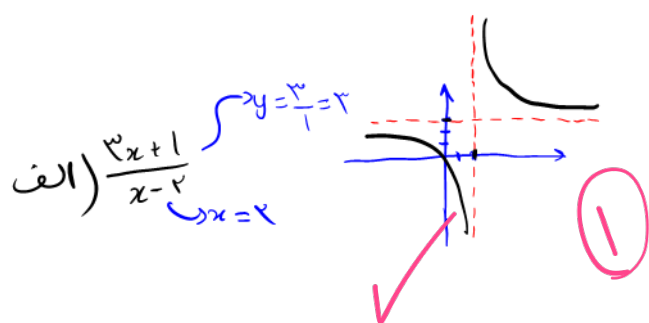
ب) $y = \sqrt{-x^2 + 9x + 10}$ $\alpha < 0 \Rightarrow \begin{cases} x_{\max} = \frac{-b}{2a} = \frac{-9}{-2} = 4.5 \\ y_{\max} = 14 \end{cases} \Rightarrow R = \sqrt{(-\infty, 14]} = [0, \sqrt{14}]$ ✓

الف) $\Rightarrow R = \mathbb{R}$ ✓

ب) $\Rightarrow R = [0, +\infty)$ ✓

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

ب) $\sqrt{\frac{x+1}{x+3}} \rightarrow R = \sqrt{\mathbb{R} - \{2\}} = [0, +\infty) - \{2\}$ ✓



الف) $\cos^2 x > 0 \Rightarrow R = [2, +\infty)$ ✓

ب) $\sqrt{x + \frac{1}{x}}$ $x > 0 \Rightarrow R = \sqrt{(-\infty, -2] \cup [2, +\infty)}$

$R = (-\infty, \sqrt{1-2}] \cup [\sqrt{2}, +\infty)$