۵ نام و نام خانوادگی نوشته نشده است.

تکلیف شماره ۹

(۲)

الف) $y = x^2 - 5$

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

ب) $y = x^3 + 1 \rightarrow \mathbb{R}$ ✓

(۱) ۲)

$y = x^2 - 4x + 6 \rightarrow x^2 - 4x + 4 + 2$

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

$x = \sqrt{y-2} + 2 \rightarrow y \geq 2 \rightarrow [2, +\infty)$ ✓

$y = x^2 - 5x + 1 = (x - \frac{5}{2})^2 - \frac{21}{4} \rightarrow y + \frac{21}{4} = (x - \frac{5}{2})^2$

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

$\pm\sqrt{y+3x} = x - 1 \rightarrow \sqrt{y+3x} + 1 = x \quad \pm\sqrt{y + \frac{21}{4}} = x - \frac{5}{2}$

$y + 3x \geq 0 \rightarrow y \geq -3x \quad x = \pm\sqrt{y + \frac{21}{4}} + \frac{5}{2} \quad R_y = [-\frac{21}{4}, +\infty)$

(۱٫۷۵) ۳)

نمره

$y = \frac{x^2+3}{x^2-2} \rightarrow yx^2 - 2y = x^2 + 3$

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

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

$x = \sqrt{\frac{2y+3}{y-1}}$ (۱) $\quad 2y + 3 = 0 \rightarrow y = -\frac{3}{2}$

$-\frac{3}{2} \quad 1$

$+ \quad - \quad +$

$(-\infty, -\frac{3}{2}] \cup (1, +\infty)$

$2y + 1 = 0$

$2y = \frac{-1}{2} \quad y = -\frac{1}{2} \quad -\frac{1}{4}x^2 + 3$

$y = \frac{2|x|+1}{|x|-3}$ ،

ب)

	$-\infty$		$-\frac{1}{3}$		-1		$+\infty$
$3y+1$	−		0	+	+	+	
$y+1$	−		−		0	+	
$\frac{3y+1}{y+1}$	+	∄	0	−	∄	+	

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

$|x|y + -3y = 2|x| + 1$

$|x|y + 2|x| = 3y + 1$

$|x|(y+2) = 3y + 1$

$|x| = \frac{3y+1}{y+2}$

$\frac{3y+1}{y+2} \geq 0$

$3y+1 = 0 \Rightarrow y = -\frac{1}{3}$

$y+2 = 0 \Rightarrow y = -2$

	$-\infty$		-2		$-\frac{1}{3}$		$+\infty$
$3y+1$	−		−		0	+	
$y+2$	−		0	+	+	+	
$\frac{3y+1}{y+2}$	+	∄	−		0	+	

$(-\infty, -2) \cup [-\frac{1}{3}, +\infty)$

۲) $y = \frac{1}{x^2 - 4x}$

$x^2 - 4x \neq 0$

$x(x-4) \neq 0$

$x \neq 0 \quad x \neq 4$

$\frac{1}{y} = x^2 - 4x \geq -4$

$\frac{1}{y} \geq -4$

$\frac{1}{y} \neq 0$

$y \neq 0$

$(-\infty, -\frac{1}{4}] \cup (0, +\infty)$

۳) روش کلی اول

$y = x^2 - 6x + 2$

$a > 0 \quad \min$

$-\frac{\Delta}{4a} = \frac{-24+8}{4} = -4$

$[-4, +\infty)$

$x^2 - 4x + 2 \quad -\frac{b}{2a} = 2$

$(2)^2 - 4(2) + 2 = -2$

$y = -x^2 + 4x + 1$

$a < 0 \quad \max$

$-\frac{b}{2a} \rightarrow \frac{-4}{-2} = 2$

$-\frac{\Delta}{4a} = \frac{-16-4}{-4} = 5$

$(-\infty, 5]$

SABA NOT BOOK

سوال ۷ و ۹ ریاضی

سوال ۷ (۲)

الف) $y = x^{4} + 2x^{3} + 2x + 1 = ?$

$R_f = \mathbb{R}$

$\rightarrow y = \sqrt{x^{4} + 2x^{3} + 2x + 1} = ? \rightarrow R - \{\}$

$x + 1 \geq 0$

$R_f = (0, +\infty)$

۹ (۲)

الف)

$y = \sqrt{x^{2} - 9x + 2}$

$b^2 - 4ac$

$(-9)^2 - 4 \times 1 \times 2 = 73$

$a > 0$ (max)

$\frac{-\Delta}{4a} \rightarrow \frac{-73 + 8}{4} = \sqrt{-17}$

$y = \sqrt{-x^{2} + 4x + 10}$

$\frac{-16 - 40}{-4} = 14 \rightarrow \sqrt{14}$

$(-\infty, 14] \rightarrow [0, +\sqrt{14}]$

$(0, +\infty)$

$y = \frac{ax + b}{cx + d} \rightarrow R - \{\frac{a}{c}\}$

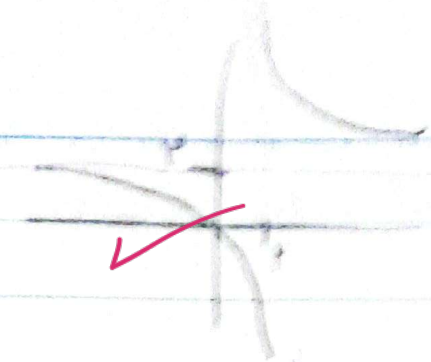
$y = \frac{3x + 1}{5x - 2} = R - \{3\}$

۸ (۲)

$y = \sqrt{\frac{4x + 1}{x + 3}} = ? \rightarrow R - [0, +\infty) - \{-3\}$

$y = \frac{a}{c} = \frac{2}{1} = 2$

$y = \frac{2x+1}{x-2}$



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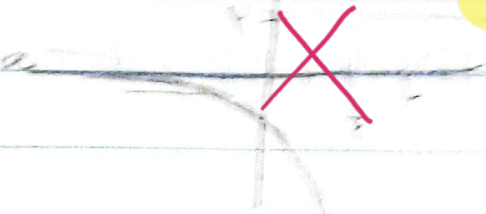
پاسخ صفحه

$y = \frac{6x-2}{1-2x}$



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$y = \cos^2 x + \frac{1}{\cos^2 x} \rightarrow Ry = [2, +\infty)$

$\cos^2 x \geq 0 \quad x \neq \frac{\pi}{2}$

$y = \sqrt{\frac{x^2+1}{x}} \quad \sqrt{x+\frac{1}{x}} \rightarrow x > 0 \quad Ry = [2, +\infty)$

$\hookrightarrow x < 0 \quad Ry = (-\infty, -2]$

$\sqrt[3]{\ } \rightarrow Ry = (-\infty, \sqrt[3]{-2}] \cup [\sqrt[3]{2}, +\infty)$

حل سوال ۹ قسمت ب

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