سری ۶ یازدهم A علیرضا موسوی

۱)

$y = \dfrac{1}{x^2 - 2x}$

$y = \dfrac{1}{x^2 - 2x + 1 - 1}$

$y = \dfrac{1}{(x-1)^2 - 1}$

$x = \sqrt{\dfrac{1}{y} + 1} + 1$

$R_f = (-\infty \quad -1] \cup (0 \quad +\infty)$

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

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

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

$x = \sqrt[3]{y-1} + 1$

$R_f = \mathbb{R}$

۲)

$\underset{max}{y = -x^2 + 6x + 3} \quad \dfrac{-\Delta}{4a} = \dfrac{4ac - b^2}{4a} = \dfrac{-12-36}{-4} = 12$

$R_f = (-\infty , 12]$

$y = x^2 - 4x + 10 \rightarrow (x-2)^2 + 6 \rightarrow \min \left| {}^{2}_{6} \right.$

$R_f = [6 , +\infty)$

$y = \sqrt{\underset{max}{6x - x^2}} \quad R_f = \sqrt{[0 , 9]}$

$\dfrac{-\Delta}{4a} = \dfrac{-36}{-4} = 9 \quad R_f = [0 , 3]$

$y = \sqrt{\underset{min}{x^2 - 4x - 3}}$

$\dfrac{-\Delta}{4a} = \dfrac{-12-16}{4} = -7$

$R_f = \sqrt{[-7 , +\infty)} = [0 \quad +\infty)$

۳)

$y = x^5 - 6x^4 + 4x + 2 \rightarrow R_f = \mathbb{R}$

$y = x^3 - 5x^2 + 2x + 1 \rightarrow R_f = \mathbb{R}$

$y = (x^5 - 4x^4 + 4x + 1)^2 \rightarrow R_f = (\mathbb{R})^2 = [0 , +\infty)$

$y = \sqrt{x^5 - 6x^4 + 5x + 1} \rightarrow R_f = \sqrt{\mathbb{R}} = [0 , +\infty)$

۴)

$y = \dfrac{2x+1}{x+1}$

$R_f = \mathbb{R} - \{2\}$

$y = \dfrac{3x+1}{x-2}$

$R_f = \mathbb{R} - \left\{\dfrac{a}{c}\right\} = \mathbb{R} - \{3\}$

۵)

$y = \sqrt{\dfrac{2x+1}{-x+2}}$

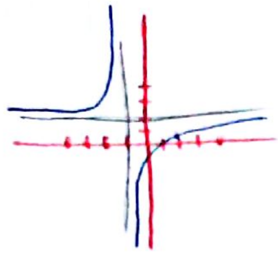
$R_f = \sqrt{\mathbb{R} - \{-2\}} = [0 \ . +\infty)$

$y = \sqrt{\dfrac{2x+4}{x+1}}$

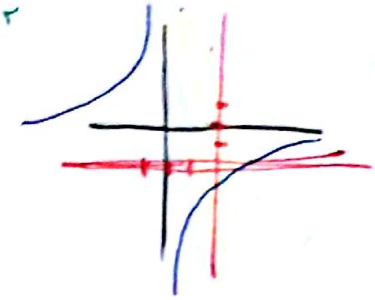
$R_f = \sqrt{\mathbb{R} - \{2\}} = [0 \quad 2) \cup (2 \quad +\infty)$

۶

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



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



۷

$y = \sin x + \frac{1}{\sin x}$

$-1 \leq \sin x \leq 1 \longrightarrow R_f = (-\infty, -2] \cup [2, +\infty)$

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

$-\infty < x^2 < +\infty \longrightarrow R_f = \mathbb{R} - (-2, 2)$

$y = \frac{\sqrt[3]{x^2}+1}{\sqrt[3]{x}} = \sqrt[3]{x} + \frac{1}{\sqrt[3]{x}}$

$-\infty < \sqrt[3]{x} < +\infty \longrightarrow R_f = \mathbb{R} - (-2, 2)$

$y = \sqrt{x} + \frac{1}{\sqrt{x}}$

$\sqrt{x} \geq 0 \longrightarrow R_f = [2, +\infty)$

۸

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

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

$x^2 + 3 > 0$

$R_f = [2, +\infty) - 3 \longrightarrow R_f = [-1, +\infty)$

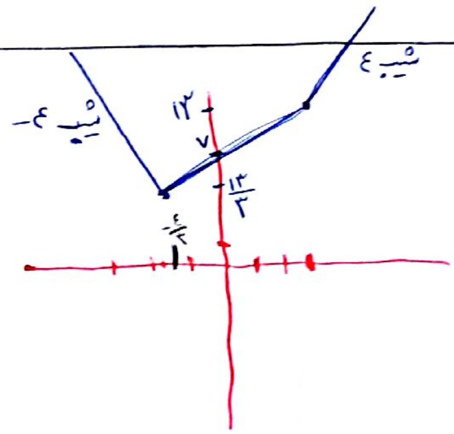
$y = \frac{x^2+5}{\sqrt{x^2+4}} = \frac{x^2+4+1}{\sqrt{x^2+4}} = \sqrt{x^2+4} + \frac{1}{\sqrt{x^2+4}}$

$\sqrt{x^2+4} > 0 \longrightarrow R_f = [2, +\infty)$

۹

$y = |x-3| + |3x+4|$

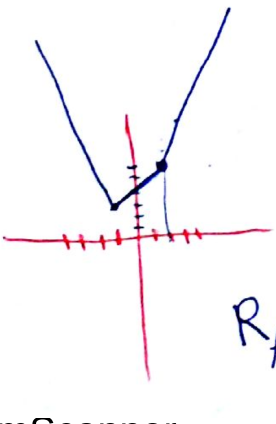
	$-\frac{4}{3}$		3	
$-4x-1$		$2x+7$		$4x+1$



۱۰

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

	-1		2	
$-3x$		$x+4$		$3x$



$R_f = [3, +\infty)$

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

$R_f = [-2, +\infty)$

	-1		1	
$3-x$		$1-3x$		$x-3$