

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره ۹ ... کلاس: یازدهم ...

الف) $y = \frac{x^3 - 3x^2 + 3x - 1 + 1}{\text{اتحاد مکعب درجه ۳}} \rightarrow (x-1)^3 + 1 = y \Rightarrow \sqrt[3]{y-1} + 1 = x$

$y \in \mathbb{R} \rightarrow R_f = \mathbb{R}$

ب) $\frac{1}{y} = x^2 - 2x \rightarrow \frac{1}{y} = x^2 - 2x + 1 - 1 = (x-1)^2 - 1$ $R_f = (-\infty, -1] \cup (0, +\infty)$

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

الف) $y = x^2 - 4x + 10$ $y_{\min} = \frac{-\Delta}{2a} = \frac{-b^2 + 4ac}{2a} = \frac{-16 + 40}{2} = 12$ $R_f = [4, +\infty)$

ب) $y = -x^2 + 4x + 3$ $y_{\max} = \frac{-\Delta}{2a} = \frac{-b^2 + 4ac}{2a} = \frac{-16 - 12}{-2} = 12$ $R_f = (-\infty, 12]$

ج) $y = \sqrt{x^2 - 2x - 3}$ $y_{\min} = -2$ $R_f = [0, +\infty)$

د) $y = \sqrt{4x - x^2}$ $y_{\max} = 2$ $R_f = [0, 2]$

الف) $x^3 - 8x^2 + 16x + 1 \rightarrow R_f = \mathbb{R}$

ب) $x^2 - 4x + 3 \rightarrow R_f = \mathbb{R}$

ج) $y = \sqrt{x^2 - 4x + 5} \rightarrow R_f = [0, +\infty)$

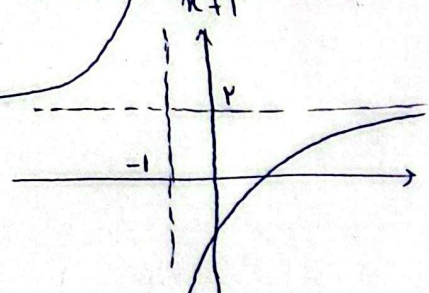
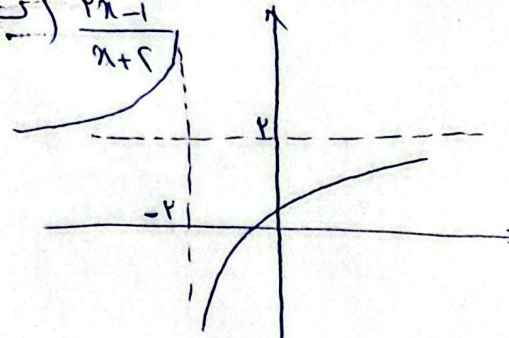
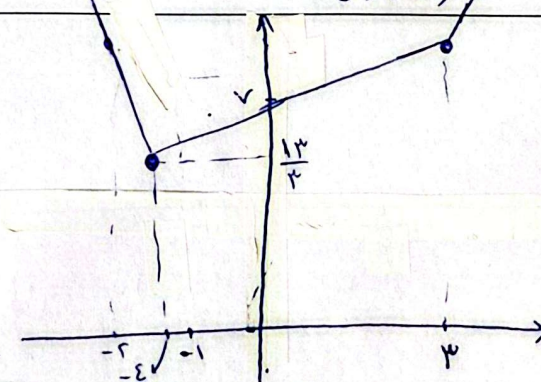
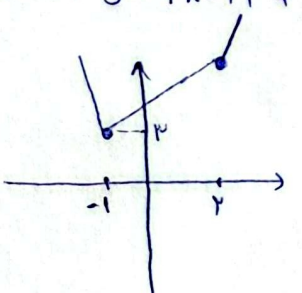
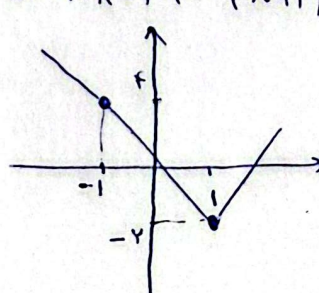
د) $y = (x^2 - 2x + 1)^2 \rightarrow R_f = [0, +\infty)$

الف) $y = \frac{3x+1}{x-2} \rightarrow R_f = \mathbb{R} - \left\{\frac{a}{c}\right\} \Rightarrow R_f = \mathbb{R} - \{3\}$

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

الف) $y = \sqrt{\frac{2x+2}{x+1}}$ $R_f = \mathbb{R} - \{1\} \rightarrow R_f = [0, +\infty) - \{\pm\sqrt{2}\}$

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

الف) $y = \frac{2x-3}{x+1}$ 	ب) $y = \frac{2x-1}{x+2}$ 	6
الف) $y = \sin x + \frac{1}{\sin x}$	$\sin x \rightarrow$ می تواند یک شود $\Rightarrow R_f = [-\infty, -1] \cup [1, +\infty)$ $\sin x \neq 0$	
ب) $y = \frac{x^2+1}{x^2} = x^2 + \frac{1}{x^2}$	$x^2 \rightarrow$ می تواند یک شود $\Rightarrow R_f = [-\infty, -1] \cup [1, +\infty)$ $x^2 \neq 0$	7
ج) $\sqrt[3]{x^2+1} = \sqrt[3]{x^2} + \frac{1}{\sqrt[3]{x^2}}$	$\sqrt[3]{x^2} \rightarrow$ می تواند یک شود $\Rightarrow R_f = [-\infty, -1] \cup [1, +\infty)$ $\sqrt[3]{x^2} \neq 0$	
د) $y = \sqrt{x} + \frac{1}{\sqrt{x}}$	$\sqrt{x} \rightarrow$ می تواند یک شود $\Rightarrow R_f = [1, +\infty)$ $\sqrt{x} \neq 0$	
الف) $x^2 + \frac{1}{x^2+3} \rightarrow \frac{(x^2+3)-3}{x^2+3} \rightarrow R_f = [0, +\infty)$ $[3, +\infty) =$ برد x^2+3	ب) $\frac{x^2+2+1}{\sqrt{x^2+2}} \rightarrow \frac{x^2+2}{\sqrt{x^2+2}} + \frac{1}{\sqrt{x^2+2}} = \sqrt{x^2+2} + \frac{1}{\sqrt{x^2+2}} \rightarrow R_f = [1, +\infty)$ $\sqrt{x^2+2} =$ برد $[2, +\infty)$	8
$y = x-3 + 3x+2$ $x < -\frac{2}{3} \rightarrow -x+3-3x-2 = -4x+1$ $-\frac{2}{3} < x < 3 \rightarrow 3-x+3x+2 = 2x+5$ $x \geq 3 \rightarrow x-3+3x+2 = 4x-1$		9
الف) $y = x-2 + 2x+2$  $R_f = [3, +\infty)$	$y = 2x-2 - (x+1)$  $R_f = [-2, +\infty)$	10