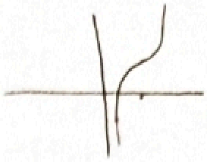
نام و نام خانوادگی: کیمیا رحیمی   شماره پاسخنامه: ۶   دوره: یازدهم دختر A

1

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



$R_f = \mathbb{R}$

ب) $y = \frac{1}{x^2 - 2x} \Rightarrow yx^2 - 2yx - 1 = 0 \Rightarrow \Delta \Rightarrow 4y^2 - 4(y)(-1) = 4y^2 + 4y$

$\Rightarrow \frac{2 \pm \sqrt{4y^2 + 4y}}{2y}$, $y \neq 0$, $4y^2 + 4y \geq 0 \Rightarrow 4y(y+1) \geq 0$

$+ \quad -1 \quad - \quad 0 \quad +$

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

2

الف) $x^2 - 4x + 10$ $\Delta \Rightarrow 16 - 4(1)(10) = -24 \Rightarrow \frac{-\Delta}{4a} = \frac{24}{4} = \boxed{6}$ $R_f = [6, +\infty)$

ب) $-x^2 + 6x + 3$ $\Delta = 36 - 4(-1)(3) = 36 + 12 = 48$ $\frac{-\Delta}{4a} \Rightarrow \frac{-48}{-4} = \boxed{12}$ $R_f = (-\infty, 12]$

پ) $\sqrt{x^2 - 4x - 3}$ $\Delta = 16 - 4(1)(-3) = 16 + 12 = 28 \Rightarrow \frac{-28}{4} = -7 \Rightarrow R_f = [0, +\infty)$

ت) $\sqrt{6x - x^2}$ $\frac{-36}{-4} = 9$ $R_f = (-\infty, 3]$

3

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

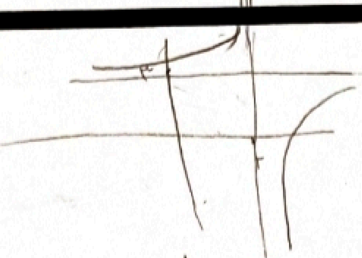
ب) $y = x^7 - 6x^4 + 3x - 2$ $R_f = \mathbb{R}$

پ) $y = \sqrt{x^7 - 6x^2 + 5x + 1}$ $R_f = [0, +\infty)$

ت) $y = (x^5 - 4x^2 + 3x + 1)^2$

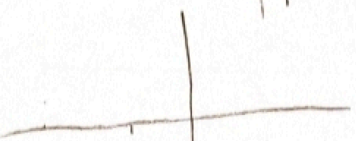
4

الف) $\frac{3x+1}{x-2}$



$R_f = \mathbb{R} - \{3\}$

ب) $\frac{2x+1}{x+1}$



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

5

$\left(y^2 = \sqrt{\frac{2x+4}{x+1}}\right) \Rightarrow y^2x + y^2 = 2x + 4 \Rightarrow y^2x - 2x = y^2 + 4 \Rightarrow x(y^2 - 2) = y^2 + 4 \Rightarrow \frac{y^2+4}{y^2-2}$

$+ \quad -\sqrt{2} \quad - \quad \sqrt{2} \quad +$

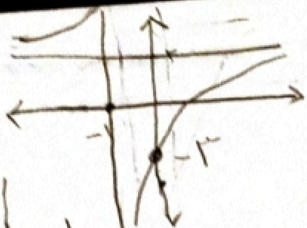
$R_f = (-\infty, -\sqrt{2}) \cup (\sqrt{2}, +\infty)$

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

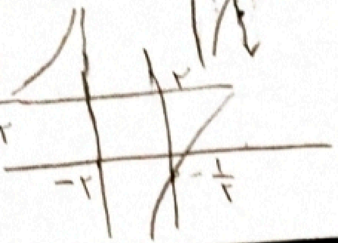
$R_f = (-\infty, -\frac{\sqrt{2}}{2}] \cup [\frac{\sqrt{2}}{2}, +\infty) \Leftarrow 2y^2 - 1 = 3x + y^2x \Rightarrow \frac{2y^2 - 1}{3 + y^2} = x$

$+ \quad -\frac{\sqrt{2}}{2} \quad - \quad \frac{\sqrt{2}}{2} \quad +$

الف) $y=\frac{2x-3}{x+1}$



ب) $\frac{2x-1}{x+2}$



6

$y=\sin x+\frac{1}{\sin x}$ $\quad R_f=(-\infty,-2]\cup[2,+\infty)$

$y=\frac{x^4+1}{x^2}=x^2+\frac{1}{x^2}$ $\quad R_f=(-\infty,-2]\cup[2,+\infty)$ 7

$y=\frac{\sqrt[3]{x^2}+1}{\sqrt[3]{x}}=\sqrt[3]{\frac{x^2}{x}}+\frac{1}{\sqrt[3]{x}}$ $\quad R_f=(-\infty,-2]\cup[2,+\infty)$

$y=\sqrt{x}+\frac{1}{\sqrt{x}}$ $\quad R_f=[2,+\infty)$

$y=x^2+\frac{1}{x^2+3}=x^2+\frac{1}{x^2+3}+3-3$ $\quad R_f\ [\frac{1}{3},+\infty)$

$\min=\sqrt{4}+\frac{1}{\sqrt{4}}$ $\quad \frac{4+1}{\sqrt{4}}=\frac{5}{\sqrt{4}}=\frac{5}{2}$ 8

$\frac{x^2+5}{\sqrt{x^2+4}}=\frac{x^2+4+1}{\sqrt{x^2+4}}=\sqrt{x^2+4}+\frac{1}{\sqrt{x^2+4}}$ $\quad R_f=[\frac{5\sqrt{4}}{4},+\infty)$

$y=|x-3|+|3x+4|$ $\quad (-x+3)$

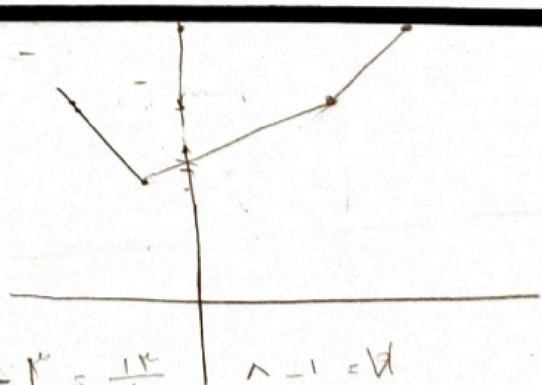
$-\frac{4}{3}$ $\quad 3$

$-4x-1 \mid 2x+7 \mid 4x+1$

$-\frac{4}{3}\times 2+7$

$-\frac{8}{3}+7=-\frac{8}{3}+\frac{21}{3}=\frac{13}{3}$

$-4\times-\frac{4}{3}-1=\frac{16}{3}-\frac{3}{3}=\frac{13}{3}$ $\quad 8-1=7$ 9



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

$-3x \mid x+4 \mid 3x$

$R_f=[3,+\infty)$

10

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

$-x+3 \mid -3x+1 \mid x-3$

$2x-2-x-1=x-3$

$-2x+2-x-1 \quad -2x+2+x+1=-x+3$