نام و نام خانوادگی [illegible] پاسخنامه تشریحی تکلیف شماره ۲ کلاس یازدهم ریاضی B

**۱**

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

$\Delta < 0$

$R_f = \mathbb{R}$

ب) $y = \dfrac{1}{x^2 - 2x} \Rightarrow yx^2 - 2yx - 1 = 0$

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

$4y^2 + 4y \geq 0$

$y(4y + 4)$

$$\begin{array}{ccccc} & -1 & & 0 & \\ + & & - & & + \end{array}$$

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

**۲**

الف) $y = x^2 - 4x + 10$ $\quad Min \left| \begin{array}{l} \frac{-b}{2a} = \frac{4}{2} = 2 \\ 4 - 8 + 10 = 6 \end{array} \right.$ $\quad R_f = [6, +\infty)$

ب) $y = -x^2 + 6x + 3$ $\quad Max \left| \begin{array}{l} \frac{-b}{2a} = \frac{-6}{-2} = 3 \\ -9 + 18 + 3 = 12 \end{array} \right.$ $\quad R_f = (-\infty, 12]$

ج) $y = \sqrt{x^2 - 4x - 3}$ $\quad Min \left| \begin{array}{l} \frac{-b}{2a} = \frac{4}{2} = 2 \\ 4 - 8 - 3 = -7 \end{array} \right.$ $\quad R_f = \sqrt{[-7, +\infty)} = [0, +\infty)$

د) $y = \sqrt{6x - x^2}$ $\quad Max \left| \begin{array}{l} \frac{-6}{-2} = 3 \\ 18 - 9 = 9 \end{array} \right.$ $\quad R_f = \sqrt{(-\infty, 9]} = [0, 3]$

**۳**

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

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

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

د) $y = (x^5 - 4x^2 + 3x + 1)^2$ $\quad R_f = (\mathbb{R})^2 = [0, +\infty)$

**۴**

الف) $y = \dfrac{3x + 1}{x - 2}$ $\quad R_f = \mathbb{R} - \{3\}$ $\quad \dfrac{a}{c} = 3$

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

**۵**

الف) $y = \sqrt{\dfrac{2x + 4}{x + 1}}$ $\quad R_f = \sqrt{\mathbb{R} - \{2\}} = [0, +\infty) - \{\sqrt{2}\}$

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

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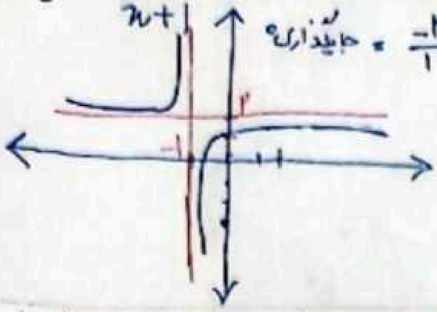
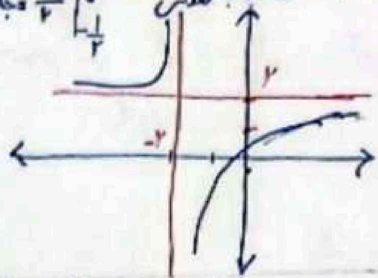
الف) $y=\frac{2x-3}{x+1}$ مجانب افقی $=\frac{a}{c}=2$ ریشه مخرج = مجانب عمودی ، جایگذاری صفر $=\frac{-3}{1}=-3$ $\begin{vmatrix}0\\-3\end{vmatrix}$

ب) $y=\frac{2x-1}{x+2}$ مجانب افقی $=\frac{a}{c}=2$ ، مجانب عمودی $=-2$ ، جایگذاری صفر $\frac{-1}{2}$ $\begin{vmatrix}0\\-\frac{1}{2}\end{vmatrix}$ ۶





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

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

ج) $y=\frac{\sqrt[3]{x^2}+1}{\sqrt[3]{x}}=\sqrt[3]{\frac{x^2}{x}}+\frac{1}{\sqrt[3]{x}}=\sqrt[3]{x}+\frac{1}{\sqrt[3]{x}} \Rightarrow R_f=(-\infty,-2]\cup[2,+\infty)$ ۷

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

الف) $y=x^2+\frac{1}{x^2+3}+3-3=x^2+3+\frac{1}{x^2+3}-3 \Rightarrow$ مینیمم $=0+3+\frac{1}{3}-3=\frac{1}{3}$

$R_f=[\frac{1}{3},+\infty)$

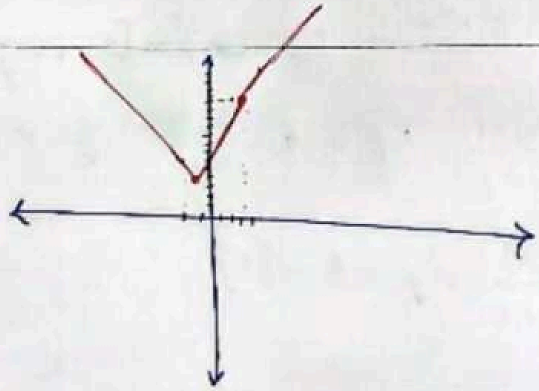
ب) $y=\frac{x^2+5}{\sqrt{x^2+4}}=\frac{x^2+4}{\sqrt{x^2+4}}+\frac{1}{\sqrt{x^2+4}}=\sqrt{x^2+4}+\frac{1}{\sqrt{x^2+4}} \Rightarrow$ مینیمم $=\sqrt{4}+\frac{1}{\sqrt{4}}=2+\frac{1}{2}=\frac{5}{2}$ ۸

$R_f=[\frac{5}{2},+\infty)$

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

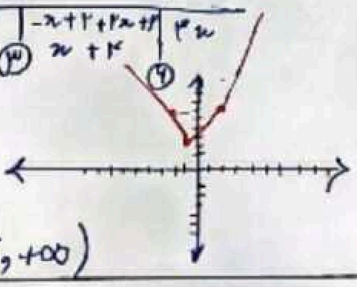
| $-\frac{4}{3}$ | | $3$ | |
|---|---|---|---|
| $-x+3-3x-4$ | $-x+3+3x+4$ | | $x-3+3x+4$ |
| $-4x-1$ | $\frac{13}{3}$ $2x+7$ | $13$ | $4x+1$ |
| $\begin{vmatrix}-2\\7\end{vmatrix}$ | | | $\begin{vmatrix}3\\13\end{vmatrix}$ |

۹



الف) $y=|x-2|+|2x+2|$

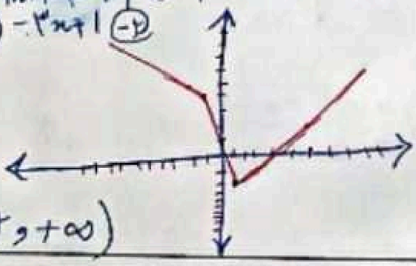
| $-1$ | | $2$ | |
|---|---|---|---|
| $-x+2-2x-2$ | $-x+2+2x+2$ | | $3x$ |
| $-3x$ | $3$ $x+4$ | $6$ | |
| $-2$ | | | |



$R_f=[3,+\infty)$

ب) $y=|2x-2|-|x+1|$

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



$R_f=[-2,+\infty)$ ۱۰

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