نام و نام خانوادگی ...علیرضا نیلوفری... پاسخنامه تشریحی تکلیف شماره ۳ کلاس دوازدهم A

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۱ (۱/۲۵)

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

$\Delta \geq 0 \to (-y+1)^2 - 4(y+2) \geq 0 \Rightarrow y^2 - 6y - 7 \geq 0$

$(y-6)(y+1) \geq 0$ $\begin{array}{ccccc} & -1 & & 6 & \\ + & \vert & - & \vert & + \end{array} \Rightarrow R_f = \mathbb{R} - (-1, 6)$

$(y+1)(y-7) \geq 0 \qquad R_f = (-\infty, -1] \cup [7, +\infty)$

۲ (۲)

الف) $R_f = [-\frac{\Delta}{4a}, +\infty)$

$\Delta = 25 - 8 = 17$

$\to -\frac{\Delta}{4a} = -\frac{17}{8}$

$R_f = [-\frac{17}{8}, +\infty)$

ب) $-x^2 + 6x - 5 \in (-\infty, 4]$

$\to \sqrt{-x^2+6x-5} \in (0, 2]$

$\to R_f = (0, 2]$

ج) $x^4 - 2x^2 + 4x + 1 \in \mathbb{R}$

$\to \sqrt{x^4 - 2x^2 + 4x + 1} \in \mathbb{R}^+$

$\to R_f = [0, +\infty)$

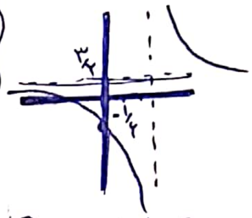
د) $x^3 - 6x^2 + 7x + 4 \in \mathbb{R}$

$\to \log x^3 - 6x^2 + 7x + 4 \in \mathbb{R}$

$\to R_f = \mathbb{R}$

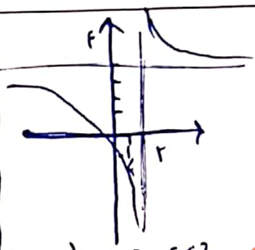
۳ (۲)

الف)



$R_f = \mathbb{R} - \{\frac{3}{2}\}$

ب)



$\frac{4x+1}{x-2} \to \mathbb{R} - \{4\}$

$R_f = [0, +\infty) - \{2\}$

ج) $\frac{x^2+4}{\sqrt{x^2+3}} = \frac{x^2+3+1}{\sqrt{x^2+3}}$

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

$t = \sqrt{3} \to$ در اول

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

د) $\underbrace{x^2 + 4 + \frac{1}{x^2+4}} - 4$

$[4 + \frac{1}{4}, +\infty)$

$\to R_f = [\frac{1}{4}, +\infty)$

۴ (۱/۷۵)

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

$\frac{y+4}{y-3} \geq 0$ $\begin{array}{ccccc} & -4 & & 3 & \\ + & \vert & - & \vert & + \end{array}$ $R_f = \mathbb{R} - (-4, 3]$

$x^2 \in (0, +\infty)$

$\to 0 \to -4$

$\to +\infty \to 3$

$x^2 - 1 = 0 \to x^2 = 1$

$R_f = (-\infty, -4] \cup (1, +\infty)$

$(3, +\infty)$

۵ (۲)

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

$-1 \leq \sin x \leq 1$

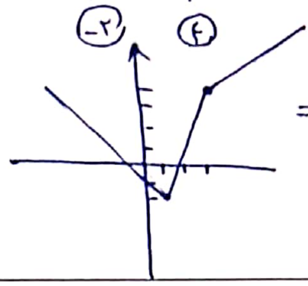
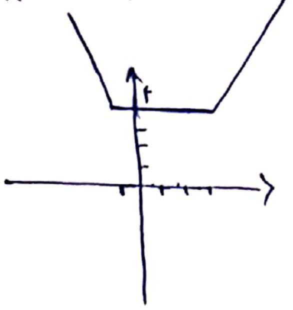
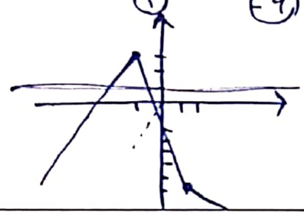
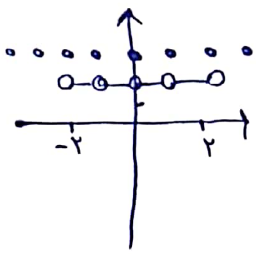
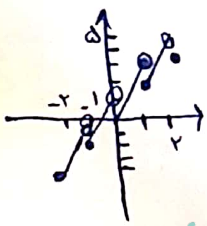
$\sin x \to 1 \to \frac{1}{4}$

$\sin x \to -1 \to -\frac{3}{1}$

$R_f = [-\frac{3}{4}, \frac{1}{4}]$

$-1 \leq -\frac{2y+1}{y-2} \leq 1 \to -\frac{2y+1}{y-2} \leq 1 \to \frac{-2y+1-y+2}{y-2} \leq 0 \to \frac{-4y+3}{y-2} \leq 0 \to (-\infty, \frac{3}{4}] \cup (2, +\infty)$

$-1 \leq -\frac{2y+1}{y-2} \to \frac{y-2-2y+1}{y-2} \geq 0 \to \frac{-2y-1}{y-2} \geq 0 \; [\frac{1}{2}, 2) \longrightarrow [-\frac{3}{4}, \frac{1}{4}] = R_f$

6	max $t \to +\infty \to 1$ min $t \to -\frac{1}{4} \to 0$ $[0,1)$ $x^2-x+\frac{1}{4}=0 \Rightarrow \frac{4}{3}$ $x^2-x+\frac{1}{4}=+\infty \Rightarrow 1$ $(x-\frac{1}{2})^2+\frac{3}{4} \neq 0$ $R_f=(1,\frac{4}{3})$ $x^2-x+1 \neq 0$ $\Rightarrow D_f=\mathbb{R}$ $x^2-x+\frac{1}{4} \in (0,+\infty)$ $\to \frac{x^2-x+1/4}{x^2-x+1/4+3/4} = \frac{(x-\frac{1}{2})^2}{(x-\frac{1}{2})^2+3/4}$ t	1
7	الف) $1 \quad 3$ $-x-1 \mid 3x-5 \mid x+1$ $(-2) \quad (4)$  $\Rightarrow R_f=[-2,+\infty)$ ب) $\lvert x-3\rvert+\lvert x+1\rvert$  $R_f=[2,+\infty)$	2
8	$-1 \quad 2$ $x+4 \mid -3x \mid -x-4$ $(3) \quad (-6)$  $-3x=1 \Rightarrow x=-\frac{1}{3}$ $x+4=1 \Rightarrow x=-3$ $\} \to R_f \Rightarrow R-\{-\frac{1}{3},-3\}$	2
9	الف) $[x]-[x]+3$  $R_f=\{3,2\}$ ب) $3x-[x]$  $R_{[-2,2]}=[-4,5)$ $R_f=\mathbb{R}$ طاها توتونچیان و بازبینی شد	1/75
10	الف) $\sin x=1 \to y=1$ $\sin x=-1 \to y=3$ $\sin x=\frac{1}{2} \to y=\frac{3}{4}$ $R=[\frac{3}{4},1]$ ب) $\sin^2 x=1 \to y=3$ $\sin^2 x=0 \to y=1$ $\sin^2 x=-\frac{1}{2} \to \times$ $R=[1,3]$	2