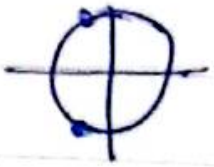
الیا میرزایی

۱- الف) $y=\frac{\sin x-2}{2\cos x+1}$ $\quad 2\cos x+1\neq 0$

$\cos x\neq \frac{-1}{2}$



$D_f=\mathbb{R}-\{2k\pi+\frac{2\pi}{3}, 2k\pi+\frac{4\pi}{3}\}$

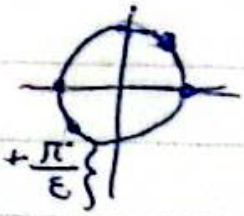
ب) $y=\frac{\sin x+2}{\cos x-1}$ $\quad \cos x\neq 1$

$D_f=\mathbb{R}-\{2k\pi\}$

۲- الف) $\frac{2\sin x+1}{\tan x+1}$ $\quad \tan x\neq -1$

$D_f=\mathbb{R}-\{k\pi-\frac{\pi}{4}, k\pi+\frac{\pi}{2}\}$

ب) $\frac{\cos x+1}{\cot x-1}$ $\quad \cot x\neq 1$



$D_f=\mathbb{R}-\{k\pi, k\pi+\frac{\pi}{4}\}$

۳- الف) $\sin xy=x^2-2$ $\quad -1\leq x^2-2\leq 1$

$1\leq x^2\leq 3 \rightarrow 1\leq x\leq\sqrt{3}, -\sqrt{3}\leq x\leq -1$

$D_f=[-\sqrt{3},-1]\cup[1,\sqrt{3}]$

ب) $y=\arccos(\sqrt{x}-2)$ $\quad \sqrt{x}\geq 0 \quad x\geq 0$

$-1\leq \sqrt{x}-2\leq 1$

$1\leq \sqrt{x}\leq 3 \rightarrow 1\leq x\leq 9 \rightarrow 1\leq x\leq 9 \rightarrow D_f=[1,9]$

۴- ب) $y = \arccos(|x| - 2)$ $\quad -1 \le |x| - 2 \le 1$

$1 \le |x| - 2 \le 1$

$2 \le |x| \le 4 \rightarrow 2 \le x \le 4$

$-4 \le x \le -2$

$D_f = [2, 4] \cup [-4, -2]$

ب) $y = \arcsin(x^2 + 3x + 1)$ $\quad -1 \le x^2 + 3x + 1 \le 1$

$-1 \le x^2 + 3x + 1$ $\quad x^2 + 3x + 2 \ge 0$ $\quad (x+1)(x+2) \ge 0$

$x^2 + 3x \le 0$ $\quad x(x+3) \le 0$

$x = 0$ $\quad x = -3$ $\quad x = -1$ $\quad x = -2$

$+ \; 0 \; - \; -3 \; + \quad + \; -1 \; - \; -2 \; +$

$D_f = [-3, -2] \cup [-1, 0]$

۵- الف) $y = \log_3^{x^2 - 4}$ $\quad x^2 - 4 > 0$ $\quad x^2 > 4$

$x > 2, \; x < -2$

$D_f = (-\infty, -2) \cup (2, \infty)$

ب) $y = \log_2^{2 - |x|}$ $\quad 2 - |x| > 0$

$|x| < +2$ $\quad -2 < x < 2$

$D_f = (-2, 2)$

$5 - x > 0$

الف) $y = \log_{x-2}^{5-x}$ $\quad 5-x>0$ $\quad x<5$ $\quad -4$

$x-2>0 \quad x>2$ $\quad \Big\} \rightarrow 2<x<5$

$x-2 \neq 1 \quad x \neq 3$

$D_f = (2,5) - \{3\}$

ب) $y = \log_{x+2}^{x^2-1}$ $\quad x^2-1>0 \quad x^2>1$

$x>1 \quad x<-1$

$x+2>0 \quad x>-2 \quad -2<x$

$x+2 \neq 1 \quad x \neq -1$

$D_f = (-2,-1) \cup (1,\infty) - \{-1\}$

الف) $y = \log \dfrac{x^2-6x+8}{x-2}$ $\quad -7$

$2 \quad 4$

$\dfrac{x^2-6x+8}{x-2} > 0 \quad \dfrac{(x-4)(x-2)}{x-2} > 0$

$- \quad 0 \quad + \quad \| \quad + \quad D_f = [4,\infty) - \{2\}$

ج) $y = \sqrt{2 - \log_2^{(x-2)}}$ ⊕ ٨.

$2 - \log_2^{(x-2)} \geq 0 \quad \log_2^{(x-2)} \leq 2$

$x - 2 \leq 4 \quad x \leq 10 \quad x - 2 > 0 \quad x > 2$

$D_f = (2, 10]$

د) $y = \log(2\log_{\mu-1}^{x})$ ← $x > 0$

$2\log_{\mu-1}^{x} > 0 \quad x\log_{\mu}^{x} > \frac{1}{2} \quad x > \mu^{\frac{1}{2}}$

$\Rightarrow D_f = \{ (\mu^{\frac{1}{\mu}}, +\infty) \}$

ه) $y = \frac{\mu}{\mu\varepsilon^{x} + 1} \quad \varepsilon^{x} \neq -1 \quad D_f = \mathbb{R}$ ٩.

و) $y = \frac{\mu}{\varepsilon^{x} - 1} \quad \varepsilon^{x} \neq 1 \quad \log_{\varepsilon}^{\varepsilon^{x}} \neq \log_{\varepsilon}^{1}$

$x \neq 0 \quad D_f = \mathbb{R} - \{0\}$

ز) $y = \frac{\mu}{\varepsilon^{x} - 2} \quad \varepsilon^{x} \neq 2 \quad x \neq \log_{\varepsilon}^{2} \quad 2 \neq \frac{1}{2}$

$D_f = \mathbb{R} - \{\frac{1}{2}\}$

ح) $\frac{\mu}{\varepsilon^{x} - \mu} \quad \varepsilon^{x} \neq \mu \quad \log_{\varepsilon}^{\varepsilon^{x}} \neq \log_{\varepsilon}^{\mu}$

$x \neq \log_{\varepsilon}^{\mu} \quad D_f = \mathbb{R} - \{\log_{\varepsilon}^{\mu}\}$

ill) $y=(\varepsilon x+1)!$ -10

$\varepsilon x+1 \in \mathbb{W} \quad \frac{\varepsilon x}{\varepsilon} \in \frac{\mathbb{W}-1}{\varepsilon}$

$D_f=\{x \mid x \in \mathbb{W} = \frac{k-1}{\varepsilon}, k \in \mathbb{W}\}$

$\therefore y=\left(\frac{\mu x-\varepsilon}{\varepsilon x-\lambda}\right)!$

$\frac{\varepsilon x-\varepsilon}{\varepsilon x-\lambda} \in \mathbb{W} \quad x_{\varepsilon}=\frac{-\Delta \mathbb{W}+\varepsilon}{\varepsilon \mathbb{W}-\varepsilon}=\frac{\Delta \mathbb{W}-\varepsilon}{\varepsilon \mathbb{W}-\varepsilon}$

$D_f=\{x \mid x=\frac{\Delta k-\varepsilon}{\varepsilon k-\varepsilon}, k \in \mathbb{W}\}$