نام و نام خانوادگی: زهرا دهقانی پاسخنامه تشریحی تکلیف شب ره: ۵ کلاس: دهم دخترانه A

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الف) $y=\frac{\sin x-2}{2\cos x+1} \Rightarrow 2\cos x+1\neq 0 \to \cos x\neq \frac{-1}{2} \Rightarrow x\neq 2k\pi-\frac{2\pi}{3}, 2k\pi+\pi-\frac{\pi}{3}$

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

ب) $y=\frac{2\sin x+1}{\cos x-1} \Rightarrow \cos x-1\neq 0 \ \cos x\neq 1 \Rightarrow x\neq 2k\pi$

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

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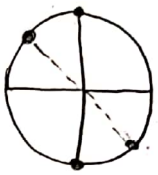
الف) $y=\frac{2\sin x+1}{\tan x+1} \Rightarrow \begin{cases}\cos x\neq 0 \Rightarrow x\neq k\pi+\frac{\pi}{2}\\ \tan x+1\neq 0 \to \tan x\neq -1 \Rightarrow x\neq k\pi+\frac{3\pi}{4}\end{cases}$

$\frac{\sin x}{\cos x}\leftarrow \tan x$, $\cos x\neq 0$

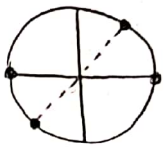
$D_f=\mathbb{R}-\{k\pi+\frac{\pi}{2}, k\pi+\frac{3\pi}{4}\}$



ب) $y=\frac{\cos x+1}{\sin x} \leftarrow \cot x-1$, $\sin x\neq 0$

$\begin{cases}\sin x\neq 0 \Rightarrow x\neq k\pi\\ \cot x-1\neq 0 \to \cot\neq 1 \Rightarrow x\neq k\pi+\frac{\pi}{4}\end{cases}$

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



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الف) $\sin y=x^2-2 \Rightarrow -1\leq x^2-2\leq 1 \to 1\leq x^2\leq 3 \to \sqrt{1}\leq x\leq \sqrt{3}$

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

ب) $y=\arccos(\sqrt{x}-2)$

$\begin{cases}\sqrt{x}\geq 0 \to x\geq 0 & \bigstar\\ -1\leq \sqrt{x}-2\leq 1 \to 1\leq \sqrt{x}\leq 3 \to 3\leq x\leq 9 & \bigstar\bigstar\end{cases}$

$D_f=\bigstar\cap\bigstar\bigstar \Rightarrow D_f=[3,9]$

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الف) $\cos y=|x|-2 \Rightarrow -1\leq |x|-2\leq 1 \to 1\leq |x|\leq 3 \to \begin{cases}3\geq x\geq 1\\ -1\geq x\geq -3\end{cases}$

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

ب) $y=\arcsin(x^2+3x+1) \Rightarrow -1\leq x^2+3x+1\leq 1 \Rightarrow \begin{cases}x^2+3x+1\leq 1 \to x^2+3x\leq 0\\ x^2+3x+1\geq -1 \to x^2+3x+2\geq 0\end{cases}$

$D_f=[-3,0]$

$\bigstar\ x(x+3)$

$\begin{array}{ccccc} & -3 & & 0 & \\ + & \vdots & - & \vdots & + \end{array}$ $\bigstar$

$D_f=(-\infty,-2]\cup[-1,+\infty)$

$\bigstar\bigstar\ (x+1)(x+2)$

$\begin{array}{ccccc} & -2 & & -1 & \\ + & \vdots & - & \vdots & + \end{array}$ $\bigstar\bigstar$

$\xrightarrow{\cap} D_f=[-3,-2]\cup[-1,0]$

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الف) $y=\log_3^{x^2-4}$ $\begin{cases}x^2-4>0 \to x^2>4 \to \begin{cases}x>2\\ x<-2\end{cases}\\ 3>0\ \checkmark\\ 3\neq 1\ \checkmark\end{cases}$ $D_f=(-\infty,-2)\cup(2,+\infty)$

ب) $y=\log_2^{2-|x|}$ $\begin{cases}2-|x|>0 \to 2>|x| \to -2<x<2\\ 2>0\ \checkmark\\ 2\neq 1\ \checkmark\end{cases}$

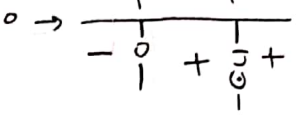
$D_f=(-2,2)$

الف) $y = \log_{x-3}^{5-x}$ $\begin{cases} 5-x>0 \to x<5 \\ x-3>0 \to x>3 \\ x-3\neq 1 \to x\neq 4 \end{cases}$ $D_f = (3,5)-\{4\}$

ب) $y = \log_{x+3}^{x^2-1}$ $\begin{cases} x^2-1>0 \to x^2>1 \\ x+3>0 \to x>-3 \\ x+3\neq 1 \to x\neq -2 \end{cases} \longrightarrow \begin{cases} x>1 \\ x<-1 \end{cases} \Rightarrow (-\infty,-1)\cup(1,+\infty)$ ۶

$\xrightarrow{\cap} D_f = (-3,-1)\cup(1,+\infty)-\{-2\}$

الف) $y = \log \frac{x^2-4x+3}{x-3} \Rightarrow \frac{x^2-4x+3}{x-3}>0 \to \frac{(x-3)(x-1)}{x-3}>0 \to$



$D_f = (1,+\infty)$ ۷

ب) $y = \log_{x+5}^{\frac{x+3}{x-2}}$ $\begin{cases} x-2\neq 0 \to x\neq 2 \\ \frac{x+3}{x-2}>0 \to \mathbb{R}-\{2\} \\ x+5>0 \to x>-5 \\ x+5\neq 1 \to x\neq -4 \end{cases}$ $D_f = (-5,+\infty)-\{-4\}$

الف) $y = \sqrt{3-\log_2^{(x-2)}} \Rightarrow 3-\log_2^{(x-2)}\geq 0 \to \log_2^{(x-2)} \leq 3 \to x-2\leq 8 \to x\leq 10$

$\begin{cases} (x-2)>0 \to x>2 \\ 2>0 \checkmark \\ 2\neq 1 \checkmark \end{cases}$ $D_f = 2<x\leq 8 = (2,10]$ ۸

ب) $y = \log(2\log_3^x - 1)$ $\begin{cases} x>0 \\ 2\log_3^x - 1>0 \to \log_3^x > \frac{1}{2} \to x > 3^{\frac{1}{2}} \to x > \sqrt[2]{3} \end{cases}$

$D_f = (\sqrt{3},+\infty)$

الف) $y = \frac{3}{4^x+1} \to 4^x+1\neq 0 \to 4^x\neq -1 \to D_f = \mathbb{R}$ (همواره برقرار است)

ب) $y = \frac{3}{4^x-1} \to 4^x-1\neq 0 \to 4^x\neq 1 \to x\neq 0 \to D_f = \mathbb{R}-\{0\}$

ج) $y = \frac{3}{4^x-2} \to 4^x-2\neq 0 \to 4^x\neq 2 \to x\neq \log_4^2 \to D_f = \mathbb{R}-\{\log_4^2\}$ ۹

د) $y = \frac{3}{4^x-3} \to 4^x-3\neq 0 \to 4^x\neq 3 \to x\neq \log_4^3 \to D_f = \mathbb{R}-\{\log_4^3\}$

الف) $y = (4x+1)! \Rightarrow 4x+1\in W \to x\in \frac{W-1}{4}$

$D_f = \{x \mid x = \frac{k-1}{4}, k\in W\}$

ب) $y = \left(\frac{3x-2}{2x-5}\right)! \Rightarrow \frac{3x-2}{2x-5}\in W \to 3x-2 = 2xw-5w \to 3x-2xw = 2-5w$ ۱۰

$\to x(3-2w) = 2-5w$

$\to x = \frac{2-5w}{3-2w}$

$D_f = \{x \mid x = \frac{2-5k}{3-2k}, k\in W\}$