نام و نام خانوادگی ..لینا میرزاخانی.............. پاسخنامه تشریحی تکلیف شماره ...۵... کلاس ...دهم تجربی...

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الف) $y = \dfrac{\sin x - 2}{2\cos x + 1}$

$2\cos x + 1 \neq 0 \to 2\cos x \neq -1 \to \cos x \neq -\dfrac{1}{2} \to x \neq \dfrac{2\pi}{3}, \dfrac{4\pi}{3}$

$D_f = R - \left\{2k\pi \pm \dfrac{2\pi}{3}\right\}$

ب) $y = \dfrac{\sin x + 3}{\cos x - 1}$

$\cos x - 1 \neq 0 \to \cos x \neq 1 \to x \neq 2k\pi \to D_f = R - \{2k\pi\}$

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الف) $y = \dfrac{2\sin x + 1}{\tan x + 1}$

$\tan x + 1 \neq 0 \to \tan x \neq -1 \to x \neq \dfrac{3\pi}{4}, \dfrac{7\pi}{4}$

$\tan x = \dfrac{\sin x}{\cos x} \to \cos x \neq 0 \to x \neq \dfrac{\pi}{2}, \dfrac{3\pi}{2}$

$D_f = R - \left\{k\pi + \dfrac{3\pi}{4}, k\pi + \dfrac{\pi}{2}\right\}$ یا $R - \left\{k\pi + \dfrac{3\pi}{4}, 2k\pi \pm \dfrac{\pi}{2}\right\}$

ب) $y = \dfrac{\cos x + 1}{\cot x - 1}$

$\cot x - 1 \neq 0 \to \cot x \neq 1 \to x \neq \dfrac{\pi}{4}, \dfrac{5\pi}{4}$

$\cot x = \dfrac{\cos x}{\sin x} \to \sin x \neq 0 \to x \neq 2\pi, \pi$

$D_f = R - \left\{k\pi, k\pi + \dfrac{\pi}{4}\right\}$

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

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

ب) $y = \arccos(\sqrt{x} - 3) \to -1 \leq \sqrt{x} - 3 \leq 1 \to 2 \leq \sqrt{x} \leq 4 \to 4 \leq x \leq 16$

$D_f = [4, 16]$

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الف) $\cos y = |x| - 3 \to -1 \leq |x| - 3 \leq 1 \to 2 \leq |x| \leq 4 \to$ $2 \leq x \leq 4$ ، $-2 \geq x \geq -4$

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

ب) $y = \arcsin(x^2 + 3x + 1) \to -1 \leq x^2 + 3x + 1 \leq 1 \to 0 \leq x^2 + 3x + 2 \leq 2$

$x^2 + 3x + 2 \geq 0 \to (x+1)(x+2) \geq 0$

-2		-1	
$+$	ϕ $-$	ϕ	$+$

$x^2 + 3x + 2 \leq 2 \to x^2 + 3x \leq 0 \to x(x+3) \leq 0$

-3		0	
$+$	ϕ $-$	ϕ	$+$

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

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

ب) $y = \log_2^{2-|x|} \to 2 - |x| > 0 \to |x| < 2 \to -2 < x < 2 \to D_f = (-2, 2)$

الف) $y = \log_{x-3}(5-x) \rightarrow \left.\begin{array}{l} 5-x>0 \rightarrow x<5 \\ x-3>0 \rightarrow x>3 \\ x-3 \neq 1 \rightarrow x \neq 4 \end{array}\right\} \rightarrow D_f = (3,5) - \{4\}$

ب) $y = \log_{x+3}(x^2-1) \rightarrow \left.\begin{array}{l} x^2-1>0 \rightarrow x^2>1 \rightarrow x>1 \text{ , } x<-1 \\ x+3>0 \rightarrow x>-3 \\ x+3 \neq 1 \rightarrow x \neq -2 \end{array}\right\} \rightarrow D_f = (-3,-1) \cup (1,+\infty) - \{-2\}$ ۶

الف) $y = \log \dfrac{x^2-4x+3}{x-3} \rightarrow \dfrac{x^2-4x+3}{x-3} > 0 \rightarrow \dfrac{(x-1)(x-3)}{x-3} > 0$ $\quad \begin{array}{ccc} & 1 & 3^* \\ - & \phi & + \ \cancel{\phi} \ + \end{array}$

$D_f = (1,3) \cup (3,+\infty)$

ب) $y = \log_{x+5} \dfrac{x+3}{x-2} \rightarrow \left.\begin{array}{l} \dfrac{x+3}{x-2} > 0 \quad \begin{array}{ccc} & -3 & 2 \\ + & \phi \ - & \cancel{\phi} \ + \end{array} \\ x+5>0 \rightarrow x>-5 \\ x+5 \neq 1 \rightarrow x \neq -4 \end{array}\right\} \rightarrow D_f = (-5,-3) \cup (2,+\infty) - \{-4\}$ ۷

الف) $y = \sqrt{3 - \log_2 (x-2)} \rightarrow x-2>0 \rightarrow x>2$

$3 - \log_2 (x-2) \geq 0 \rightarrow \log_2 (x-2) \leq 3 \rightarrow x-2 \leq 8 \rightarrow x \leq 10$

$D_f = (2,10]$

ب) $y = \log(2\log_3 x - 1) \rightarrow x>0$

$2\log_3 x - 1 > 0 \rightarrow 2\log_3 x > 1 \rightarrow \log_3 x > \frac{1}{2} \rightarrow x > 3^{(\frac{1}{2})}$ ۸

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

الف) $y = \dfrac{3}{4^x+1} \rightarrow 4^x+1 \cancel{\neq} 0 \rightarrow \underbrace{4^x \neq -1}_{\text{همواره درست است}} \rightarrow D_f = R$

ب) $y = \dfrac{3}{4^x-1} \rightarrow 4^x-1 \neq 0 \rightarrow 4^x \neq 1 \rightarrow x \neq 0 \rightarrow D_f = R - \{0\}$

ج) $y = \dfrac{3}{4^x-2} \rightarrow 4^x-2 \neq 0 \rightarrow 4^x \neq 2 \rightarrow x \neq \frac{1}{2} \rightarrow D_f = R - \{\frac{1}{2}\}$ ۹

د) $y = \dfrac{3}{4^x-3} \rightarrow 4^x-3 \neq 0 \rightarrow 4^x \neq 3 \rightarrow x \neq \log_4 3 \rightarrow D_f = R - \{\log_4 3\}$

الف) $y = (4x+1)! \rightarrow 4x+1 \in W \rightarrow 4x \in W-1 \rightarrow x \in \dfrac{W-1}{4} \rightarrow D_f = \{x \mid x = \frac{k-1}{4}, k \in W\}$

ب) $y = \left(\dfrac{3x-2}{2x-5}\right)! \rightarrow \dfrac{3x-2}{2x-5} \in W \rightarrow x \in -\dfrac{-5W+2}{2W-3} \rightarrow x \in \dfrac{-5W+2}{3-2W}$ ۱۰

$D_f = \left\{x \mid x = \dfrac{-5k+2}{3-2k}, k \in W\right\}$