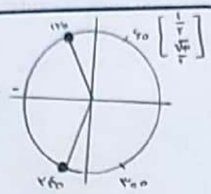
نام و نام خانوادگی: لیا بهرامی‌نژاد ...... پاسخنامه تشریحی تکلیف شماره ۵ کلاس دهم دختر

۱

الف) $2\cos x+1\neq 0 \rightsquigarrow \cos x\neq -\frac{1}{2}$

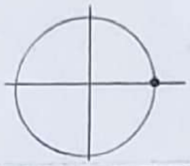


$\rightarrow D_f = R-\left\{2k\pi+\frac{2\pi}{3}, 2k\pi+\frac{4\pi}{3}\right\}$

یا

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

ب) $\cos x-1\neq 0 \longrightarrow \cos x\neq 1$

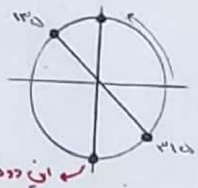


$\longrightarrow D_f = R-\{2k\pi\}$

۲

الف) $\tan x+1\neq 0 \rightarrow \tan x\neq -1$

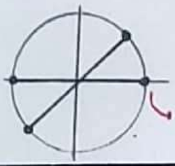
$\tan=\frac{\sin}{\cos} \Rightarrow \frac{\sin}{0}$ = تعریف نشده



این دو نقطه tan تعریف نشده دارند.

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

ب) $\cot x-1\neq 0 \longrightarrow \cot x\neq 1$



cot = تعریف نشده

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

۳

الف) $\sin y = x^2-2 \rightsquigarrow -1\leq x^2-2\leq 1 \xrightarrow{+2} 1\leq x^2\leq 3 \xrightarrow{\sqrt{}} 1\leq x\leq \sqrt{3} \longrightarrow D_f = [1,\sqrt{3}]\cup[-1,-\sqrt{3}]$

$\quad \hookrightarrow -1\geq x\geq -\sqrt{3}$

ب) $y=\overbrace{\arccos}^{[-1,1]}(\sqrt{x}-3) \longrightarrow -1\leq \sqrt{x}-3\leq 1 \xrightarrow{+3} 2\leq\sqrt{x}\leq 4 \rightsquigarrow 4\leq x\leq 16 \longrightarrow D_f = [4,16]$

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الف) $\cos y = |x|-3 \rightsquigarrow -1\leq |x|-3\leq 1 \xrightarrow{+3} 2\leq |x|\leq 4 \longrightarrow \begin{cases} 2\leq x\leq 4 \\ -2\geq x\geq -4 \end{cases} \longrightarrow D_f = [-4,-2]\cup[2,4]$

ب) $y=\overbrace{\arcsin}^{[-1,1]}(x^2+3x+1) \rightsquigarrow -1\leq x^2+3x+1\leq 1 \longrightarrow \begin{cases} ① \; x^2+3x+1\leq 1 \xrightarrow{-1} x^2+3x\leq 0 \\ ② \; x^2+3x+1\geq -1 \xrightarrow{+1} x^2+3x+2\geq 0 \end{cases}$

① $\overset{0}{x}\,\overset{-3}{(x+3)}=0$

x	-3		0	
+		-		+

② $\overset{-1}{(x+1)}\,\overset{-2}{(x+2)}$

x	-2		-1	
+		-		+

$\Rightarrow D_f = ①\cap② \longrightarrow D_f : [-3,-2]\cup[-1,0]$

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الف) $\log_3 (x^2-4) \longrightarrow x^2-4>0 \xrightarrow{+4} x^2>4 \rightsquigarrow x>2, \; x<-2 \longrightarrow D_f : (-\infty,-2)\cup(2,+\infty)$

ب) $\log_2 (2-|x|) \longrightarrow 2-|x|>0 \longrightarrow |x|<2 \longrightarrow -2<x<2 \rightsquigarrow D_f = (-2,2)$

۶

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

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

۷

الف) $y=\log \dfrac{x^2-4x+3}{x-3} \to \left\{ \dfrac{x^2-4x+3}{x-3}>0 \to \dfrac{\overset{1}{\overline{(x-1)}}\overset{3}{\overline{(x-3)}}}{\underset{3}{\underline{x-3}}}>0 \to \right.$

x		1		3^*	
	$-$	0	$+$	$\emptyset$	$+$

$D_f=(1,3)\cup(3,+\infty)$ یا $(1,+\infty)-\{3\}$

ب) $y=\log_{x+5}^{\frac{x+3}{x-2}} \to \begin{cases} \dfrac{\overset{-3}{\overline{x+3}}}{\underset{2}{\underline{x-2}}}>0 \to \\ x+5>0 \to x>-5 \\ x\neq 1 \end{cases}$

x		-3		2	
	$+$	0	$-$	$\emptyset$	$+$

$\to (-\infty,-3)\cup(2,+\infty)$

$\to (-5,+\infty)$

$x+5\neq 1 \to x\neq -4$

$\Rightarrow D_f = (-5,-3)\cup(2,+\infty)-\{-4\}$

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الف) $y=\sqrt{3-\log_2^{(x-2)}} \begin{cases} ① \ 3-\log_2^{(x-2)} \geq 0 \to 3\geq \log_2^{(x-2)} \to x-2\leq 8 \to x\leq 10 \\ ② \ x-2>0 \to x>2 \end{cases}$

$\overset{①,②}{\Rightarrow} 2<x\leq 10 \to D_f=(2,10]$

ب) $y=\log(2\log_3^x-1) \begin{cases} 2\log_3^x-1 \to x>0 \\ 2\log_3^x-1>0 \to \log_3^x>\frac{1}{2} \to x>\underset{\sqrt{3}}{\underline{3^{\frac{1}{2}}}} \end{cases} \to D_f=(\sqrt{3},+\infty)$

۹

الف) $4^x+1\neq 0 \to 4^x\neq -1$ همواره درست $\to D_f=\mathbb{R}$

$a^0=1$ ← ب) $4^x-1\neq 0 \to 4^x\neq 1 \quad D_f=\mathbb{R}-\{0\}$

ج) $4^x-2\neq 0 \to 4^x\neq 2 \quad D_f=\mathbb{R}-\{\log_4^2\}$ $\qquad \log_b^a=c \to b^c=a$

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

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نکته: $y=\square! \to \square\in W$

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

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

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