نام و نام خانوادگی ..امیر [illegible]...... پاسخنامه تشریحی تکلیف شماره ..۵.. کلاس دهم A ....

1

الف) $\dfrac{\sin x - 2}{2\cos x + 1} \Rightarrow \quad 2\cos x + 1 \neq 0 \rightarrow 2\cos x \neq -1 \rightarrow \cos x \neq \dfrac{-1}{2}$

$x \neq 120^\circ, 240^\circ \rightarrow D_f = \mathbb{R} - \{2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3}\}$

ب) $y = \dfrac{\sin x + 3}{\cos x - 1} \Rightarrow \cos x - 1 \neq 0 \rightarrow \cos x \neq 1 \rightarrow \{0^\circ, 360^\circ\} \rightarrow D_f = \mathbb{R} - \{2k\pi\}$

2

الف) $y = \dfrac{2\sin x + 1}{\tan x + 1} \rightarrow \tan x + 1 \neq 0 \rightarrow \tan x \neq -1 \rightarrow x = k\pi - \frac{\pi}{4} \rightarrow D_f = \mathbb{R} - \{k\pi - \frac{\pi}{4}\}$

ب) $y = \dfrac{\cos x + 1}{\cot x - 1} \rightarrow \cot x - 1 \neq 0 \rightarrow \cot x \neq 1 \rightarrow x \neq k\pi + \frac{\pi}{4} \rightarrow D_f = \mathbb{R} - \{k\pi + \frac{\pi}{4}\}$

3

الف) $\sin y = x^2 - 2 \rightarrow -1 \leq x^2 - 2 \leq 1 \rightarrow$
$1 \leq x^2 \leq 3 \rightarrow \sqrt{1} \leq x \leq \sqrt{3} \rightarrow D_f = [1, \sqrt{3}]$

ب) $\arccos(\sqrt{x} - 3) \rightarrow -1 \leq \sqrt{x} - 3 \leq 1$
$2 \leq \sqrt{x} \leq 4 \rightarrow \quad 4 \leq x \leq 16 \rightarrow D_f = [4, 16]$

4

الف) $\cos y = |x| - 3 \rightarrow -1 \leq |x| - 3 \leq 1 \rightarrow 2 \leq |x| \leq 4 \rightarrow D_f = [-4, -2] \cup [2, 4]$

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

$x^2 + 3x + 1 \geq -1 \rightarrow (x+1)(x+2) \geq 0 \quad \begin{array}{ccccc} & -2 & & -1 & \\ + & & - & & + \end{array}$

$x^2 + 3x + 1 \leq 1 \rightarrow x(x+3) \leq 0 \quad \begin{array}{ccccc} & -3 & & 0 & \\ + & & - & & + \end{array}$

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

5

الف) $y = \log_3 (x^2 - 4) \rightarrow x^2 - 4 > 0 \rightarrow x^2 > 4 \rightarrow x > 2, x < -2 \rightarrow D_f = (-\infty, -2) \cup (2, +\infty)$

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

الف) $y=\log_{x-3}(5-x)$ $\left.\begin{array}{l} 5-x>0 \to x<5 \\ x-3>0 \to x>3 \text{ و } x-3\neq 1 \to x\neq 4 \end{array}\right\} \xrightarrow[D_f]{\cap} (3,5)-\{4\}$ ۶

ب) $y=\log_{x+3}(x^2-1)$ $\left.\begin{array}{l} x^2-1>0 \to x^2>1 \to x>1 \\ x+3>0 \to x>-3 \text{ و } x+3\neq 1 \to x\neq -2 \end{array}\right\} \xrightarrow{\cap} D_f=(1,+\infty)$

الف) $y=\log_{x-3}\dfrac{x^2-4x+3}{x-3}$ $\quad \dfrac{(x-3)(x-1)}{x-3}>0 \to \begin{array}{c} \quad 1 \quad 3 \\ -\,|+\,|+ \end{array} \to x\neq 3 \text{ و } 1 \longrightarrow$

$D_F=(1,+\infty)-\{3\}$

ب) $y=\log_{x+5}\dfrac{x+3}{x-2}$ $\left\{\begin{array}{l} \dfrac{x+3}{x-2}>0 \to \quad x\neq -3 \text{ و } 2 \\ x+5>0 \to x>-5 \\ x+5\neq 1 \to x\neq -4 \end{array}\right. \longrightarrow \begin{array}{c} -5 \quad -4 \quad -3 \quad 2 \\ -\,|+\,|+\,|-\,|+ \end{array}$ $D_f=(-5,-4)\cup(-4,-3)\cup(2,+\infty)$ ۷

الف) $y=\sqrt{3-\log_2^{(x-2)}}$ $\left.\begin{array}{l} \to x-2>0 \to x>2 \\ \to 3-\log_2^{(x-2)}\geq 0 \to \log_2^{(x-2)}\leq 3 \to x-2\leq 8 \to x\leq 10 \end{array}\right\} \xrightarrow{\cap} D_f=(2,10]$

ب) $\log(2\log_3^x-1)$ $\left\{\begin{array}{l} x>0 \quad (1) \\ 2\log_3^x-1>0 \to \log_3^x>\dfrac{1}{2} \to x>3^{\frac{1}{2}}=\sqrt{3} \quad (2) \end{array}\right.$ $\xrightarrow{\cap} D_f=(\sqrt{3},+\infty)$ ۸

الف) $y=\dfrac{3}{4^x+1} \to 4^x+1\neq 0 \to 4^x\neq -1 \xrightarrow{\text{همواره برقرار}} D_f=\mathbb{R}$

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

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

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

الف) $y=(4x+1)! \to 4x+1\in W \to 4x\in W-1 \to x\in \dfrac{W-1}{4} \to D_f=\left\{x \,\middle|\, x=\dfrac{k-1}{4},\ k\in W\right\}$

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

$x(3-2W)=2-5W \to x=\dfrac{2-5W}{3-2W} \longrightarrow$

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