

الف) $y = \frac{\sin x - 2}{2 \cos x + 1} \Rightarrow 2 \cos x + 1 \neq 0 \Rightarrow \cos x \neq -\frac{1}{2}$  $\Rightarrow D_f = \mathbb{R} - \left\{ 2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3} \right\}$

ب) $y = \frac{\sin x + 3}{\cos x - 1} \Rightarrow \cos x - 1 \neq 0 \Rightarrow \cos x \neq 1$  $\Rightarrow D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{2} \right\}$

الف) $y = \frac{2 \sin x + 1}{\tan x + 1} \Rightarrow \tan x + 1 \neq 0 \Rightarrow \tan x \neq -1$  $\Rightarrow D_f = \mathbb{R} - \left\{ k\pi + \frac{3\pi}{4} \right\}$

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

الف) $\sin y = x^2 - 2$ $D_f = \mathbb{R}$

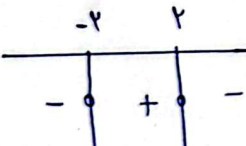
ب) $y = \arccos(\sqrt{x} - 3) \Rightarrow -1 \leq \sqrt{x} - 3 \leq 1 \Rightarrow 2 \leq \sqrt{x} \leq 4 \Rightarrow 4 \leq x \leq 16$
 $\Rightarrow D_f = (-\infty, 4] \cup [16, +\infty)$

الف) $\cos y = |x| - 3$ $D_f = \mathbb{R}$

ب) $y = \arcsin(x^2 + 3x + 1) \Rightarrow -1 \leq x^2 + 3x + 1 \leq 1 \Rightarrow -2 \leq x^2 + 3x \leq 0$
 $\Rightarrow \begin{matrix} \sqrt{x} & x & x & \sqrt{x} & x \\ 0 & 1 & 2 & -1 & -1,5 \end{matrix}$ $D_f = [0, -1]$

الف) $y = \log_3(x^2 - 4) \Rightarrow x^2 - 4 > 0 \Rightarrow (x - 2)(x + 2) > 0$

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

ب) $y = \log_2(x^2 - 1) \Rightarrow x^2 - 1 > 0 \Rightarrow (x - 1)(x + 1) > 0$  $\Rightarrow D_f = (-2, 2)$

الف) $y = \log_{\omega-\omega}^{\omega-\omega} \Rightarrow \omega < \omega$
 $\omega > \omega, \omega \neq \omega$ $D_f = (3, 5) - \{4\}$

ب) $y = \log_{\omega+3}^{\omega^2-1} \Rightarrow \frac{\omega^2-1}{\omega+3} > 0$
 $(\omega-1)(\omega+1) > 0$ $D_f = (-3, -2) \cup (-2, -1) \cup (1, +\infty)$

$\omega+3 > 0 \Rightarrow \omega > -3$
 $\omega+3 \neq 1 \Rightarrow \omega \neq -2$

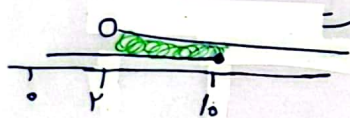
الف) $y = \log_{\omega-3}^{\frac{\omega^2-4\omega+3}{\omega-3}} \Rightarrow \frac{(\omega-1)(\omega-3)}{(\omega-3)} > 0$
 $\Rightarrow \frac{1}{-} \frac{3^*}{+} + +$

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

ب) $y = \log_{\omega+5}^{\frac{\omega+3}{\omega-2}} \Rightarrow \frac{\omega+3}{\omega-2} > 0$
 $\Rightarrow \frac{-3}{+} \frac{2}{-} + +$ $D_f = (-5, -4) \cup (-4, -3) \cup (2, +\infty)$

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

$\log_2^{\omega-2} > 0 \Rightarrow \log_2^{\omega-2} \leq 3 \Rightarrow 2^1 \leq \omega-2 \Rightarrow 10 \leq \omega$



$\Rightarrow D_f = (2, 10]$ ب) $y = \log_{\omega-1}^{\log_2 \omega - 1} \Rightarrow \log_2 \omega - 1 > 0$
 $\omega=1 \Rightarrow -1 \times$
 $\omega=3 \Rightarrow 1 \checkmark \Rightarrow D_f = [3, +\infty)$

الف) $y = \frac{3}{f^{\omega}+1} \Rightarrow f^{\omega}+1 \neq 0 \Rightarrow f^{\omega} \neq -1 \checkmark \quad \mathbb{R}$

ب) $y = \frac{3}{f^{\omega}-3} \Rightarrow f^{\omega}-3 \neq 0$

ب) $\frac{3}{f^{\omega}-1} \Rightarrow f^{\omega}-1 \neq 0 \Rightarrow f^{\omega} \neq 1 \Rightarrow D_f = \mathbb{R} - \{0\}$

$f^{\omega} \neq 3 \Rightarrow \omega \neq \log_f 3$
 $D_f = \mathbb{R} - \{\log_f 3\}$

ج) $y = \frac{3}{f^{\omega}-2} \Rightarrow f^{\omega}-2 \neq 0 \Rightarrow f^{\omega} \neq 2 \Rightarrow \omega \neq \log_f 2 \Rightarrow D_f = \mathbb{R} - \{\log_f 2\}$

الف) $y = (f^{\omega}+1)!$ $f^{\omega}+1 \in \mathbb{N} \Rightarrow \omega \in \frac{\mathbb{N}-1}{f} \Rightarrow D_f = \left\{ \omega \mid \omega = \frac{k-1}{f}, k \in \mathbb{N} \right\}$

ب) $y = \left(\frac{3\omega-2}{2\omega-5} \right)!$ $\Rightarrow \left\{ \omega \mid \omega = \frac{-5k+1}{2k-3}, k \in \mathbb{N} \right\}$