

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

$\cos x + 1 \neq 0 \Rightarrow \cos x \neq -1$

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

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

$\cos x - 1 \neq 0 \Rightarrow \cos x \neq 1$

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



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

$\begin{cases} \tan x + 1 \neq 0 \Rightarrow \tan x \neq -1 \Rightarrow x \neq k\pi - \frac{\pi}{4} \\ \cos x \neq 0 \Rightarrow x \neq k\pi + \frac{\pi}{2} \end{cases}$

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

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

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

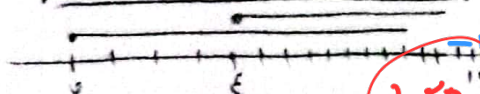
$D_f = \mathbb{R} - \left\{ k\pi, k\pi + \frac{\pi}{4} \right\}$



الف)  $\sin y = x^2 - 2$

$-1 \leq x^2 - 2 \leq 1$

ب)  $D_f = [-1, 3]$



ب)  $y = \arccos(\sqrt{x} - 3)$

$-1 \leq \sqrt{x} - 3 \leq 1$

$D_f = [4, 14]$

$\begin{cases} x^2 - 2 \geq -1 \Rightarrow x^2 \geq 1 \Rightarrow x \leq -1 \text{ or } x \geq 1 \\ x^2 - 2 \leq 1 \Rightarrow x^2 \leq 3 \Rightarrow -\sqrt{3} \leq x \leq \sqrt{3} \end{cases}$

$\begin{cases} \sqrt{x} - 3 \geq -1 \Rightarrow \sqrt{x} \geq 2 \Rightarrow x \geq 4 \\ \sqrt{x} - 3 \leq 1 \Rightarrow \sqrt{x} \leq 4 \Rightarrow x \leq 16 \end{cases}$

الف)  $\cos y = |x| - 3$

$-1 \leq |x| - 3 \leq 1$

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

$\begin{cases} |x| - 3 \geq -1 \Rightarrow |x| \geq 2 \Rightarrow x \leq -2 \text{ or } x \geq 2 \\ |x| - 3 \leq 1 \Rightarrow |x| \leq 4 \Rightarrow -4 \leq x \leq 4 \end{cases}$

ب)  $y = \arcsin(x^2 + 3x + 1)$

$-1 \leq x^2 + 3x + 1 \leq 1$

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

$\begin{cases} x^2 + 3x + 1 \geq -1 \Rightarrow x^2 + 3x + 2 \geq 0 \Rightarrow (x+1)(x+2) \geq 0 \Rightarrow x \leq -2 \text{ or } x \geq -1 \\ x^2 + 3x + 1 \leq 1 \Rightarrow x^2 + 3x \leq 0 \Rightarrow x(x+3) \leq 0 \Rightarrow -3 \leq x \leq 0 \end{cases}$

الف)  $y = \log_3(x^2 - 4)$

$x^2 - 4 > 0 \Rightarrow (x-2)(x+2) > 0$

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

ب)  $y = \log_4(x-1)$

$x-1 > 0 \Rightarrow x > 1$

$D_f = (1, \infty)$

