

$$\text{الف) } y = \frac{\cot x + 1}{\tan x + 1}$$

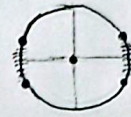
$$\begin{aligned} \sin x &\neq 0 \\ \cos x &\neq 0 \\ \tan x &\neq -1 \end{aligned}$$



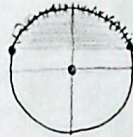
$$D_f = \mathbb{R} - \left\{ \frac{4\pi}{5}, k\pi - \frac{\pi}{4} \right\}$$

$$\text{ب) } y = \sqrt{1 - \frac{1}{x} \sin x} \Rightarrow 1 \geq \frac{1}{x} \sin x \Rightarrow \frac{1}{x} \geq \sin x \Rightarrow \frac{1}{x} \geq \sin x \geq -\frac{1}{x}$$

$$D_f = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right]$$

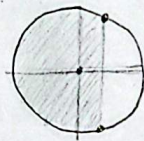


$$\text{الف) } y = \sqrt{x \sin x - 1} \Rightarrow x \sin x \geq 1 \Rightarrow \sin x \geq \frac{1}{x}$$



$$D_f = \left[2k\pi + \frac{\pi}{4}, 2k\pi + \frac{5\pi}{4} \right]$$

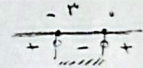
$$\text{ب) } y = \sqrt{1 - x \cos x} \Rightarrow \frac{1}{x} \geq \cos x$$



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

$$\text{الف) } \arcsin(x^2 + 2n + 1)$$

$$-1 \leq x^2 + 2n + 1 \leq 1 \Rightarrow x^2 + 2n \leq 0 \Rightarrow x(x + 2) \leq 0$$



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



$$0 \leq x^2 + 2n + 1 \Rightarrow 0 \leq (n + 1)(n + 2) \Rightarrow \frac{-2}{-1} \leq \frac{-1}{-1}$$

$$\text{ب) } \cos y = \sqrt{\omega - 2n} \Rightarrow \omega - 2n \leq 1 \Rightarrow \omega \leq 2n + 1$$

$$\omega \geq 2n$$

$$D_f = [2n, 2n + 1]$$

$$\text{الف) } y = \log_{\frac{1}{x}}(1 - \log_{\frac{1}{x}})$$

$$x > 0$$

$$1 - \log_{\frac{1}{x}} > 0 \Rightarrow 1 > \log_{\frac{1}{x}} \Rightarrow x > \frac{1}{e}$$

$$D_f = (0, \frac{1}{e})$$

$$\text{ب) } y = \log_{\frac{1}{x}}(1 - \log_{\frac{1}{x}})$$

$$x > 0$$

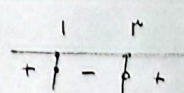
$$1 > \log_{\frac{1}{x}} \Rightarrow \frac{1}{x} < e \Rightarrow x > \frac{1}{e}$$

$$D_f = (\frac{1}{e}, +\infty)$$

$$\text{الف) } y = \sqrt{x^{2n-2} - 1}$$

$$x^{2n-2} \geq 1 \Rightarrow x \geq 1$$

$$x^{2n-2} \geq 1 \Rightarrow x^{2n-2} - 1 \geq 0 \Rightarrow (x-1)(x^{2n-3} + \dots + 1) \geq 0$$



$$D_f = [1, +\infty)$$

$$\text{ب) } y = \left(\frac{x_n + a}{x_n + b} \right)!$$

$$\frac{x_n + a}{x_n + b} \in \mathbb{N} \Rightarrow x \in -\frac{bw - a}{bw - b}$$

$$D_f = \left\{ n \mid n = \frac{bw - a - bk}{bw - b}, k \in \mathbb{N} \right\}$$