

Y₀

مسألة في حساب التفاضل والتكامل

الف) $y = \frac{\sin x - 1}{1 \cos x + 1} \rightarrow 1 \cos x \neq -1 \rightarrow \cos x \neq -1 \rightarrow Df = \mathbb{R} - \{2k\pi + \pi, 4k\pi + \pi\}$

ب) $y = \frac{\sin x + 1}{\cos x - 1} \Rightarrow \cos x \neq 1 \rightarrow Df = \mathbb{R} - \{2k\pi\}$

الف) $y = \frac{1 \sin x + 1}{\tan x + 1} \rightarrow \begin{cases} \tan x \neq -1 \\ \tan x + 1 \neq 0 \\ \sin x \neq 0 \end{cases} \rightarrow Df = \mathbb{R} - \{k\pi + \frac{\pi}{2}, k\pi - \frac{\pi}{2}\}$

ب) $y = \frac{\cos x + 1}{\cot x - 1} \rightarrow \begin{cases} \cot x - 1 \neq 0 \rightarrow \cot x \neq 1 \\ \sin x \neq 0 \end{cases} Df = \mathbb{R} - \{k\pi + \frac{\pi}{2}, k\pi\}$

الف) $\sin y = x^2 - 2 \rightarrow -1 \leq x^2 - 2 \leq 1 \rightarrow 1 \leq x^2 \leq 3 \rightarrow \begin{cases} 1 \leq x \leq \sqrt{3} \\ -1 \leq x \leq -\sqrt{3} \end{cases} Df = [-\sqrt{3}, -1] \cup [1, \sqrt{3}]$

ب) $y = \arccos(\sqrt{x} - 1) \rightarrow -1 \leq \sqrt{x} - 1 \leq 1 \rightarrow \begin{cases} 0 \leq \sqrt{x} \leq 2 \\ x \geq 0 \end{cases} \rightarrow 0 \leq x \leq 4 \rightarrow Df = [0, 4]$

الف) $\cos y = |x| - 1 \rightarrow -1 \leq |x| - 1 \leq 1 \rightarrow 0 \leq |x| \leq 2 \rightarrow \begin{cases} 0 \leq x \leq 2 \\ -2 \leq x \leq 0 \end{cases} Df = [-2, -1] \cup [1, 2]$

ب) $y = \arcsin(x^2 + 2x + 1) \rightarrow -1 \leq x^2 + 2x + 1 \leq 1 \rightarrow \begin{cases} x^2 + 2x + 1 \geq -1 \rightarrow x^2 + 2x + 2 \geq 0 \\ x^2 + 2x + 1 \leq 1 \rightarrow x^2 + 2x \leq 0 \end{cases}$

$\frac{-2}{+b} - \frac{-1}{+b} \mid \frac{-2}{+b} - \frac{-1}{+b} \rightarrow Df = [-2, -1] \cup [1, 2]$

الف) $y = \log_e^{x^2 - 2} \rightarrow x^2 - 2 > 0 \rightarrow x^2 > 2 \rightarrow \begin{cases} x > \sqrt{2} \\ x < -\sqrt{2} \end{cases} Df = (-\infty, -\sqrt{2}) \cup (\sqrt{2}, \infty)$

ب) $y = \log_p^{2 - |x|} \rightarrow 2 - |x| > 0 \rightarrow |x| < 2 \rightarrow -2 < x < 2 \rightarrow Df = (-2, 2)$

الف) $y = \log_{x-1}^{b-x} \rightarrow \begin{cases} b-x > 0 \rightarrow x < b \\ x-b > 0 \rightarrow x > b \\ x-b \neq 1 \rightarrow x \neq b+1 \end{cases} Df = (b, b) - \{b+1\}$

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

الف) $y = \log \frac{x^2 - 2x + 1}{x - 1} \rightarrow \frac{x^2 - 2x + 1}{x - 1} > 0 \rightarrow \frac{(x-1)(x-1)}{(x-1)} > 0 \rightarrow \frac{1}{1} > 0 \rightarrow Df = (1, \infty) - \{1\}$

