

الف) $y = \frac{\sin x - 1}{1 \cos x + 1}$ ب) $y = \frac{\sin x + 1}{\cos x - 1}$	$1 \cos x + 1 \neq 0 \Rightarrow 1 \cos x \neq -1 \Rightarrow \cos x \neq -\frac{1}{1}$ $D(f) = \mathbb{R} - \left\{ 2k\pi + \frac{3\pi}{2}, 2k\pi - \frac{\pi}{2} \right\}$		1
الف) $y = \frac{1 \sin x + 1}{\tan x + 1}$ ب) $y = \frac{\cos x + 1}{\cot x - 1}$	$\tan x + 1 \neq 0 \Rightarrow \tan x \neq -1$ $\tan x = \frac{\sin x}{\cos x} \Rightarrow \cos x \neq 0$ $\cot x - 1 \neq 0 \Rightarrow \cot x \neq 1$ $\cot x = \frac{\cos x}{\sin x} \Rightarrow \sin x \neq 0$		2
الف) $\sin y = x^2 - 1$ ب) $y = \arccos(\sqrt{x} - 1)$	$-1 \leq x^2 - 1 \leq 1 \xrightarrow{+1} 0 \leq x^2 \leq 2 \Rightarrow 0 \leq x \leq \sqrt{2}$ $-1 \leq \sqrt{x} - 1 \leq 1 \xrightarrow{+1} 0 \leq \sqrt{x} \leq 2 \Rightarrow 0 \leq x \leq 4$	$D(f) = [0, \sqrt{2}] \cup [-\sqrt{2}, -1]$ $D(f) = [0, 4]$	3
الف) $\cos y = x - 1$ ب) $y = \arcsin(x^2 + 13x + 1)$	$-1 \leq x - 1 \leq 1 \xrightarrow{+1} 0 \leq x \leq 2 \Rightarrow 0 \leq x \leq 2$ $-1 \leq x^2 + 13x + 1 \leq 1 \xrightarrow{+1} 0 \leq x^2 + 13x + 2 \leq 2$ $0 \leq x^2 + 13x + 2 \leq 2 \Rightarrow x^2 + 13x + 2 \leq 2 \Rightarrow x^2 + 13x \leq 0 \Rightarrow x(x + 13) \leq 0 \Rightarrow -13 \leq x \leq 0$	$D(f) = [0, 2] \cup [-2, -1]$ $D(f) = [-13, 0]$	4
الف) $y = \log_3 \frac{x^2 - 4}{3}$ ب) $y = \log_2 \frac{1 - x }{1}$	$\frac{x^2 - 4}{3} > 0 \Rightarrow x^2 > 4 \Rightarrow x < -2 \text{ or } x > 2 \Rightarrow D(f) = (-\infty, -2) \cup (2, +\infty)$ $1 - x > 0 \Rightarrow x < 1 \Rightarrow -1 < x < 1 \Rightarrow D(f) = (-1, 1)$		5

