

الف) $y = \sqrt{\frac{x^2 - 4x}{x^3 - x}} \Rightarrow \frac{x^2 - 4x}{x^3 - x} \geq 0$ $\frac{x(x-4)}{x(x-1)(x+1)} \geq 0$ $D_f = (-1, 0) \cup (0, 1) \cup [4, +\infty)$	ب) $y = \sqrt{\frac{x^4 - x^3}{x^3 - x}} \Rightarrow \frac{x^4 - x^3}{x^3 - x} \geq 0$ $\frac{x^3(x-1)}{x(x-1)(x+1)} \geq 0$ $D_f = \mathbb{R} - [1, 0, -1]$
الف) $y = \frac{x+1}{\sqrt{x+ x }} \Rightarrow \frac{x+1}{\sqrt{x+ x }} > 0$ $x \neq 0$ $x \neq -1$ $D_f = (0, +\infty)$	ب) $y = \frac{1}{\sqrt{x x }} \Rightarrow \frac{1}{\sqrt{x x }} > 0$ $x > 0$ $x < 0$ $D_f = (0, +\infty)$
الف) $y = \sqrt{2 - [x]} \Rightarrow 2 - [x] \geq 0$ $2 \geq [x]$ $D_f = (-\infty, 2)$	ب) $y = \frac{1}{\sqrt{2 - [x]}} \Rightarrow 2 - [x] > 0$ $[x] < 2$ $D_f = (-\infty, 2)$
الف) $y = \sqrt{[x - \frac{1}{x}] + [x + \frac{1}{x}]} \Rightarrow [x - \frac{1}{x}] + [x + \frac{1}{x}] \geq 0$ $x + \frac{1}{x} = x - \frac{1}{x} + 1 \Rightarrow [x - \frac{1}{x}] + 1 [x - \frac{1}{x}] + ([x - \frac{1}{x}] + 1)$ $2 [x - \frac{1}{x}] \geq -1$ $x \geq \frac{1}{x}$ $D_f = [\frac{1}{x}, +\infty)$	ب) $y = \sqrt{[x - \frac{1}{x}] + [-x + \frac{1}{x}]}$
الف) $y = \frac{1}{\sin x - 1} \Rightarrow \sin x - 1 \neq 0$ $\sin x \neq 1$ $D_f = \{x \mid x \neq \frac{\pi}{2} + 2k\pi\}$	ب) $y = \frac{1}{1 - \sin^2 x} \Rightarrow \sin^2 x - 1 \neq 0 \Rightarrow \sin x \neq \pm 1$ $D_f = \mathbb{R} - [\frac{\pi}{2} + k\pi, \frac{3\pi}{2} + k\pi]$

الف) $y = \sqrt{2 \sin x - 1} \Rightarrow 2 \sin x - 1 \geq 0$ $\sin x \geq \frac{1}{2}$ $D_f = \left\{ 2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6} \right\}$	ب) $y = \sqrt{\cos x - 1} \Rightarrow \cos x - 1 \geq 0$ $\cos x \geq 1$ $D_f = \{ 2k\pi \}$		
الف) $\cos y = x + 3 \Rightarrow -1 \leq x \leq 1$ $-2 \leq x \leq 4$ $D_f = [-2, -1] \cup [1, 4]$	ب) $y = \arcsin(x^2 + 2x + 1)$ $-1 \leq x^2 + 2x + 1 \leq 1$ $D_f = [-2, -1] \cup [-1, 0]$		
الف) $y = \sqrt{2 - \log_2(x-2)}$ $2 - \log_2(x-2) \geq 0 \Rightarrow \log_2(x-2) \leq 2$ $x - 2 \leq 4 \Rightarrow x \leq 6$ $x - 2 > 0 \Rightarrow x > 2$ $D_f = (2, 6]$	ب) $y = \log(x^2 - x) \Rightarrow x^2 - x > 0$ $x(x-1)(x+1) > 0$ $D_f = (-1, 0) \cup (1, +\infty)$		
$y = \frac{2}{x^2 + 1}$ $x^2 + 1 \neq 0$ $x^2 \neq -1$ $D_f = \mathbb{R}$	$y = \frac{2}{x^2 - 1}$ $x^2 - 1 \neq 0 \Rightarrow x \neq \pm 1$ $D_f = \mathbb{R} - \{ -1, 1 \}$	$y = \frac{2}{x^2 - 2}$ $x^2 - 2 \neq 0 \Rightarrow x \neq \pm \sqrt{2}$ $D_f = \mathbb{R} - \{ \sqrt{2}, -\sqrt{2} \}$	$y = \frac{2}{x^2 - 3}$ $x^2 - 3 \neq 0 \Rightarrow x \neq \pm \sqrt{3}$ $D_f = \mathbb{R} - \{ \sqrt{3}, -\sqrt{3} \}$
الف) $y = (x+1)!$ $x+1 \in \mathbb{N} \Rightarrow x = \frac{n-1}{1}$ $D_f = \left\{ x \mid x = \frac{k-1}{1}, k \in \mathbb{N} \right\}$	ب) $\left(\frac{x^2 - 2}{x^2 - 5} \right)! \Rightarrow \frac{x^2 - 2}{x^2 - 5} \in \mathbb{N}$ $x^2 - 2 = 2 \leq x^2 - 5 < 3$ $x(x^2 - 2) = 2 - 5 < x$ $D_f = \left\{ x \mid x = \frac{2-5k}{x^2 - 2}, k \in \mathbb{N} \cup \{0\} \right\}$		