

الف) $y = \sqrt{\frac{x^2 - 4x}{x^2 - x}} \Rightarrow \frac{x^2 - 4x}{x^2 - x} \geq 0 \Rightarrow \frac{x(x-4)}{x(x-1)(x-1)} \Rightarrow$

ب) $y = \sqrt{\frac{x^2 - x}{x^2 - x}} \Rightarrow \frac{x^2 - x}{x^2 - x} \geq 0 \Rightarrow \frac{x(x-1)(x-1)}{x(x-1)(x-1)} \Rightarrow$

$D_f = \mathbb{R} - \{1, 0\}$

الف) $y = \frac{x+1}{\sqrt{x+1}} \Rightarrow x+1 > 0 \Rightarrow D_f = \mathbb{R}^+$

ب) $y = \frac{1}{\sqrt{x+1}} \Rightarrow x+1 > 0 \Rightarrow D_f = \mathbb{R}^+$

الف) $y = \sqrt{2-x} \Rightarrow 2-x \geq 0 \Rightarrow x \leq 2 \Rightarrow D_f = (-\infty, 2]$

ب) $y = \frac{1}{\sqrt{2-x}} \Rightarrow 2-x > 0 \Rightarrow x < 2 \Rightarrow D_f = (-\infty, 2)$

الف) $y = \sqrt{\left[x - \frac{1}{x}\right] + \left[x + \frac{1}{x}\right]} \Rightarrow \left[x - \frac{1}{x}\right] + \left[x + \frac{1}{x}\right] \geq 0 \Rightarrow \left[x + \frac{1}{x} - 1\right] + \left[x + \frac{1}{x}\right] \geq 0$

ب) $y = \sqrt{\left[x - \frac{1}{x}\right] + \left[-x + \frac{1}{x}\right]} \Rightarrow \text{if } \begin{cases} x \in \mathbb{Z} \rightarrow 0 \\ x + \frac{1}{x} \notin \mathbb{Z} \rightarrow -1 \end{cases} \Rightarrow D_f = \left\{x \mid x = k + \frac{1}{x}, k \in \mathbb{Z}\right\}$

الف) $y = \frac{x}{\sin x - 1} \Rightarrow \sin x \neq 1 \Rightarrow D_f = \mathbb{R} - \left\{2k\pi + \frac{\pi}{2}\right\}$

ب) $y = \frac{x}{x \sin x - 1} \Rightarrow x \sin x \neq 1 \Rightarrow \sin x \neq \frac{1}{x} \Rightarrow \sin x \neq \pm \frac{1}{x} \Rightarrow$

$D_f = \mathbb{R} - \left\{\frac{k\pi}{x}\right\}$

الف) $y = \sqrt{2 \sin x - 1} \Rightarrow 2 \sin x \geq 1 \Rightarrow \sin x \geq \frac{1}{2} \Rightarrow D_f = \left[k\pi + \frac{\pi}{6}, k\pi + \frac{5\pi}{6} \right]$

ب) $y = \sqrt{\cos x - 1} \Rightarrow \cos x \geq 1 \Rightarrow D_f = \{2k\pi\}$

الف) $\cos y = |x| - 2 \Rightarrow -1 \leq |x| - 2 \leq 1 \Rightarrow -1 \leq |x| \leq 3 \Rightarrow x \leq -2, x \geq 2 \Rightarrow D_f = [-2, -1] \cup [1, 2]$

ب) $y = \arcsin(x^2 + x + 1) \Rightarrow -1 \leq x^2 + x + 1 \leq 1 \Rightarrow 0 \leq x^2 + x + 1 \leq 1 \Rightarrow x^2 + x + 1 \leq 1 \Rightarrow x^2 + x \leq 0 \Rightarrow x(x+1) \leq 0 \Rightarrow D_f = [-1, 0] \cup [0, 1]$

الف) $y = \sqrt{2 - \log(x-2)} \Rightarrow \log(x-2) \leq 2 \Rightarrow x-2 \leq 9 \Rightarrow x \leq 11 \Rightarrow D_f = (2, 11]$

ب) $y = \log(x^2 - x) \Rightarrow x^2 - x > 0 \Rightarrow x(x-1) > 0 \Rightarrow D_f = (-1, 0) \cup (1, +\infty)$

الف) $y = \frac{x}{x^2 + 1} \Rightarrow x \neq -1 \Rightarrow D_f = \mathbb{R} \Rightarrow$ بفطانية x هي مربع منفي نفى سرد

ب) $y = \frac{x}{x^2 - 1} \Rightarrow x \neq 1 \Rightarrow x \neq 0 \Rightarrow D_f = \mathbb{R} - \{0\}$

ج) $y = \frac{x}{x^2 - 2} \Rightarrow x \neq \sqrt{2} \Rightarrow x \neq \log_{\epsilon} 2 \Rightarrow D_f = \mathbb{R} - \{\log_{\epsilon} 2\}$

د) $y = \frac{x}{x^2 - 2} \Rightarrow x \neq \sqrt{2} \Rightarrow x \neq \log_{\epsilon} 2 \Rightarrow D_f = \mathbb{R} - \{\log_{\epsilon} 2\}$

الف) $y = (x+1)! \Rightarrow x+1 \in \mathbb{N} \Rightarrow x \in \mathbb{N} - 1 \Rightarrow D_f = \{x \mid x = \frac{k-1}{\epsilon}, k \in \mathbb{N}\}$

ب) $y = \left(\frac{x-2}{x-5} \right)! \Rightarrow \frac{x-2}{x-5} \in \mathbb{N} \Rightarrow x-2 \in \mathbb{N} \cdot (x-5) \Rightarrow x-2 \in \mathbb{N} \cdot (x-5) \Rightarrow x \in \frac{x-2}{x-5} \Rightarrow D_f = \{x \mid x = \frac{x-2}{x-5}, k \in \mathbb{N}\}$