

الف) $y = \frac{1}{x[x]}$ → $x[x] > 0 \xrightarrow{Df=R - [0,1]}$ ✓

ب) $y = \frac{1}{\sqrt{x[x]}}$ → $-x[x] > 0 \rightarrow x[x] < 0 \rightarrow Df = \emptyset$ ✓ (2)

الف) $y = \sqrt{[x - \frac{1}{e}] + [x + \frac{e}{e}]} \rightarrow [x - \frac{1}{e}] + [x + \frac{e}{e}] \geq 0 \rightarrow [x + \frac{e}{e} - 1] + [x + \frac{e}{e}] \geq 0$

✓ $[x + \frac{e}{e}] \geq 1 \rightarrow [x + \frac{e}{e}] \geq \frac{1}{e} \rightarrow x + \frac{e}{e} \geq 1 \rightarrow x \geq \frac{1}{e} \rightarrow Df = [\frac{1}{e}, +\infty)$ ✓ (2)

ب) $y = \sqrt{[x - \frac{1}{e}] + [-x + \frac{1}{e}]} = \sqrt{[x - \frac{1}{e}] + [-(x - \frac{1}{e})]} \rightarrow x - \frac{1}{e} \in \mathbb{Z} \rightarrow x \in \mathbb{Z} + \frac{1}{e}$

$Df = \{x \mid x = k + \frac{1}{e}, k \in \mathbb{Z}\}$ ✓

الف) $y = \frac{1}{\sqrt{\sin^2 x - 1}}$ → $\sqrt{\sin^2 x - 1} \neq 0 \rightarrow \sin^2 x \neq \frac{1}{e} \rightarrow \sin x \neq \pm \frac{1}{\sqrt{e}} \rightarrow$

$Df = \mathbb{R} - \{ \frac{k\pi}{e} + \frac{\pi}{e} \}$ ✓

ب) $y = \frac{\cot x + 1}{\tan x + 1} \rightarrow \left. \begin{array}{l} D \cos x \neq 0 \\ \textcircled{1} \sin x \neq 0 \\ \textcircled{2} \tan x \neq -1 \end{array} \right\} \sim Df = \mathbb{R} - \{ \frac{k\pi}{e}, k\pi - \frac{\pi}{e} \}$ ✓ (2)

الف) $y = \sqrt{e \sin x - 1} \rightarrow e \sin x - 1 \geq 0 \rightarrow \sin x \geq \frac{1}{e} \rightarrow Df = [2k\pi + \frac{\pi}{e}, 2k\pi + \frac{6\pi}{e}]$ ✓ (2)

ب) $y = \sqrt{1 - e \cos x} \rightarrow 1 - e \cos x \geq 0 \rightarrow \cos x \leq \frac{1}{e} \Rightarrow Df = \{ 2k\pi + \frac{\pi}{e}, 2k\pi + \frac{6\pi}{e} \}$ ✓

$$Df = [-1, 2]$$

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الف) $y = \sqrt{4 - \sqrt{2-x}}$ ① $4 - \sqrt{2-x} \geq 0 \rightarrow \sqrt{2-x} \leq 4 \rightarrow -x + 2 \leq 16 \rightarrow x \geq -14$

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ب) $y = \sqrt{4 - \sqrt{2-x}}$ ② $4 - \sqrt{2-x} \geq 0 \rightarrow \sqrt{2-x} \leq 4 \rightarrow -x + 2 \leq 16 \rightarrow x \geq -14$

الف) $y = \sqrt{4 - 2x^2} \rightarrow 4 - 2x^2 \geq 0 \rightarrow 2x^2 \leq 4 \rightarrow x^2 \leq 2 \rightarrow \sqrt{2} \geq x \geq -\sqrt{2} \rightarrow Df = [-\sqrt{2}, \sqrt{2}]$

ب) $y = \sqrt{3|x| - 9} \rightarrow 3|x| - 9 \geq 0 \rightarrow 3|x| \geq 9 \rightarrow |x| \geq 3 \rightarrow x \geq 3 \text{ or } x \leq -3 \rightarrow (-\infty, -3] \cup [3, +\infty)$

الف) $y = \sqrt[3]{\frac{|x|+1}{|x|-3}} \rightarrow |x| \neq 3 \rightarrow x \neq \pm 3 \rightarrow Df = \mathbb{R} - \{-3, 3\}$

ب) $y = \sqrt[3]{\frac{\sqrt{x+1}}{\sqrt{x}-3}} \rightarrow \sqrt{x} \neq 3 \rightarrow Df = [0, +\infty) - \{9\}$

الف) $y = \frac{\sqrt{3 - |x|}}{|x| + 2} \rightarrow 3 - |x| \geq 0 \rightarrow |x| \leq 3 \rightarrow -3 \leq x \leq 3 \rightarrow Df = [-3, 3]$

ب) $y = \frac{\sqrt{4 - x^2}}{|x| - 1} \rightarrow 4 - x^2 \geq 0 \rightarrow x^2 \leq 4 \rightarrow -2 \leq x \leq 2$
 ② $|x| - 1 \neq 0 \rightarrow x \neq \pm 1 \rightarrow Df = [-2, 2] - \{\pm 1\}$

الف) $y = \frac{x+1}{\sqrt{x+|x|}} \rightarrow x + |x| \geq 0 \rightarrow Df = \mathbb{R}^+ [0, +\infty)$

ب) $y = \frac{1}{\sqrt{x|x|}} \rightarrow x|x| \geq 0 \rightarrow Df = (0, +\infty)$

الف) $y = \sqrt{2 - [x]} \Rightarrow 2 - [x] \geq 0 \rightarrow 2 \geq [x] \rightarrow Df = (-\infty, 3)$

ب) $y = \frac{1}{\sqrt{2 - [x]}} \rightarrow 2 - [x] \geq 0 \rightarrow 2 \geq [x] \rightarrow Df = (-\infty, 3)$