

الف) $y = \frac{1}{x \lfloor x \rfloor} \rightarrow x \lfloor x \rfloor \neq 0 \xrightarrow{Df} \mathbb{R} - [0, 1)$

ب) $y = \frac{1}{\sqrt{x \lfloor x \rfloor}} \Rightarrow -x \lfloor x \rfloor > 0 \rightarrow x \lfloor x \rfloor < 0 \rightarrow Df = \emptyset$

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

$\vee \left[x + \frac{x}{x}\right] \geq 1 \rightarrow \left[x + \frac{x}{x}\right] \geq \frac{1}{x} \rightarrow x + \frac{x}{x} \geq 1 \rightarrow x \geq \frac{1}{x} \rightarrow Df = \left[\frac{1}{x}, +\infty\right)$

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

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

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

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

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

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

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

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

-1

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

② $4 - \sqrt{2-x} \geq 0 \rightarrow \sqrt{2-x} \leq 4 \rightarrow -x + 2 \leq 16 \rightarrow x \geq -14$
 $\rightarrow \sqrt{4 - \sqrt{2-x}} \rightarrow$ ① $x - 2 \geq 0 \rightarrow x \geq 2$ $Df = [2, 11]$
 ② $4 - \sqrt{2-x} \geq 0 \rightarrow \sqrt{2-x} \leq 4 \rightarrow -x + 2 \leq 16 \rightarrow x \geq -14$

الف) $y = \sqrt{4 - 2x^2} \rightarrow 4 - 2x^2 \geq 0 \rightarrow 2x^2 \leq 4 \rightarrow x^2 \leq 2 \rightarrow \sqrt{2} \geq x \geq -\sqrt{2} \rightarrow Df = [-\sqrt{2}, \sqrt{2}]$ -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) $y = \sqrt[3]{\frac{|x|+1}{|x|-3}} \rightarrow |x| \neq 3 \rightarrow x \neq \pm 3 \rightarrow Df = \mathbb{R} - \{-3, 3\}$ -3

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

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

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

الف) $y = \frac{x+1}{\sqrt{x+|x|}} \rightarrow x + |x| \geq 0 \rightarrow Df = \mathbb{R}^+$
 $[0, +\infty)$ -5

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

الف) $y = \sqrt{2 - [x]} \Rightarrow 2 - [x] \geq 0 \rightarrow [x] \leq 2 \rightarrow Df = (-\infty, 3)$ -6

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