

الف)  $y = \sqrt{4 - \sqrt{2-x}}$  →  $2-x \geq 0 \rightarrow x \leq 2$   
 $4 \geq \sqrt{2-x} \geq 0 \rightarrow 14 \geq 2-x \geq 0 \rightarrow \begin{cases} x \geq -12 \\ x \leq 2 \end{cases} \rightarrow D_f = [-12, 2]$

ب)  $y = \sqrt{13 - \sqrt{x-2}}$  →  $x-2 \geq 0 \rightarrow x \geq 2$   
 $3 \geq \sqrt{x-2} \geq 0 \rightarrow 9 \geq x-2 \geq 0 \rightarrow \begin{cases} x \leq 11 \\ x \geq 2 \end{cases} \rightarrow D_f = [2, 11]$

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

ب)  $y = \sqrt{3|x|-9}$  →  $3|x|-9 \geq 0 \rightarrow 3|x| \geq 9 \rightarrow |x| \geq 3 \rightarrow -3 \leq x \leq 3$   
 $D_f = [-3, 3]$

الف)  $y = \sqrt{\frac{|x|+1}{|x|-3}}$  →  $|x|-3 \neq 0 \rightarrow |x| \neq 3 \rightarrow x \neq \pm 3 \rightarrow D_f = \mathbb{R} - \{+3, -3\}$

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

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

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

الف)  $y = \frac{x+1}{\sqrt{x+|x|}}$  →  $x+|x| \geq 0 \rightarrow x \geq 0 \rightarrow D_f = (0, +\infty)$

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

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)  $y = \frac{1}{x[x]}$   $\rightarrow x[x] \neq 0 \rightarrow x, [x] \neq 0 \rightarrow [x] \neq 0 \rightarrow x \neq (-1, +1)$   
 $\rightarrow D_f = \mathbb{R} - (-1, +1)$

ب)  $y = \frac{1}{\sqrt{-x[x]}}$   $\rightarrow -x[x] > 0 \rightarrow x \neq (-1, +1)$   
 $x \neq 1R^+ \rightarrow D_f = (-\infty, -1)$

مثال:  $x = 2.3 \rightarrow -\frac{2.3}{(2.3)} \rightarrow -1.4 > 0$   $x$  ليس صحيح

الف)  $y = \sqrt{[x - \frac{1}{x}] + [x + \frac{1}{x}]} \rightarrow [x - \frac{1}{x}] + [x + \frac{1}{x}] + 1 \geq 0 \rightarrow [x + \frac{1}{x}] + [x + \frac{1}{x}] \geq 1$   
 $\rightarrow 2[x + \frac{1}{x}] \geq 1 \rightarrow [x + \frac{1}{x}] \geq \frac{1}{2} \rightarrow D_f = [\frac{1}{2}, +\infty)$

ب)  $y = \sqrt{[x - \frac{1}{x}] + [-x + \frac{1}{x}]} \rightarrow \sqrt{[x - \frac{1}{x}] + [-(x - \frac{1}{x})]} \rightarrow \begin{cases} a \in \mathbb{Z} \rightarrow \text{ب.ب.} = 0 \\ a \notin \mathbb{Z} \rightarrow \text{ب.ب.} = -1 \end{cases}$   
 $D_f = \{x \mid x = k - \frac{1}{x}, k \in \mathbb{Z}\}$   $\hookrightarrow [a] + [-a]$   $\hookrightarrow x - \frac{1}{x} \in \mathbb{Z}$

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

ب)  $y = \frac{\cot x + 1}{\tan x + 1} \rightarrow \tan x + 1 \neq 0 \rightarrow \tan x \neq -1 \rightarrow x \neq k\pi + \frac{3\pi}{4}$   
 $D_f = \mathbb{R} - \{k\pi + \frac{3\pi}{4}\}$

الف)  $y = \sqrt{2 \sin x - 1} \rightarrow 2 \sin x - 1 \geq 0 \rightarrow 2 \sin x \geq 1 \rightarrow \sin x \geq \frac{1}{2} \rightarrow D_f = \{k\pi - \frac{\pi}{6}, k\pi + \frac{\pi}{6}\}$

ب)  $y = \sqrt{1 - 2 \cos x} \rightarrow 1 - 2 \cos x \geq 0 \rightarrow 2 \cos x \leq 1 \rightarrow \cos x \leq \frac{1}{2}$   
 $\hookrightarrow D_f = \{2k\pi + \frac{\pi}{3}, 2k\pi - \frac{\pi}{3}\}$