

$$\text{الف) } y = \sqrt{4-5x} \rightarrow \begin{cases} 4-x \geq 0 \rightarrow \boxed{x \leq 2} \\ 4-5x \geq 0 \rightarrow \sqrt{4-5x} \leq 2 \rightarrow 4-5x \leq 4 \rightarrow \boxed{x \geq -1} \end{cases}$$

$$-1 \leq x \leq 2 \rightarrow D_f = [-1, 2]$$

$$\text{ب) } \sqrt{3-5x-2} \rightarrow \begin{cases} x-2 \geq 0 \rightarrow \boxed{x \geq 2} \\ 3-5x-2 \geq 0 \rightarrow \sqrt{x-2} \leq 3 \rightarrow x-2 \leq 9 \rightarrow \boxed{x \leq 11} \end{cases}$$

$$2 \leq x \leq 11 \rightarrow D_f = [2, 11]$$

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

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

$$|x| \leq 3 \rightarrow |x| \geq 3$$

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

$$\text{ب) } \sqrt{\frac{\sqrt{x}+1}{\sqrt{x}-3}} \rightarrow \begin{cases} x \geq 0 \\ \sqrt{x}-3 \neq 0 \rightarrow \sqrt{x} \neq 3 \rightarrow \boxed{x \neq 9} \end{cases} \rightarrow D_f = [0, 9) \cup (9, \infty)$$

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

$$\text{ب) } y = \frac{\sqrt{4-x^2}}{|x|-1} \rightarrow \begin{cases} 4-x^2 \geq 0 \rightarrow x^2 \leq 4 \rightarrow -2 \leq x \leq 2 \\ |x|-1 \neq 0 \rightarrow |x| \neq 1 \rightarrow x \neq 1, x \neq -1 \end{cases} \rightarrow D_f = [-2, -1) \cup (-1, 1) \cup (1, 2]$$

$$\text{الف) } y = \frac{x+1}{\sqrt{x+|x|}} \rightarrow x+|x| > 0 \rightarrow x > -|x| \rightarrow D_f = \mathbb{R}$$

$$\text{ب) } y = \frac{1}{\sqrt{x|x|}} \rightarrow x|x| \geq 0 \rightarrow D_f = [0, \infty)$$

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

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

الغ) $y = \frac{1}{x[x]}$ $\rightarrow x[x] \neq 0 \rightarrow \begin{cases} x=0 \\ [x]=0 \end{cases} \rightarrow 0 \leq x < 1 \quad D_f = (-\infty, 0) \cup [1, \infty)$

ب) $y = \frac{1}{\sqrt{x[x]}} \rightarrow -x[x] \geq 0 \rightarrow x[x] \leq 0 \quad \begin{cases} x=0 \\ [x]=0 \end{cases} \rightarrow 0 \leq x < 1 \quad D_f = [0, 1)$

الف) $y = \sqrt{[x - \frac{1}{4}] + [x + \frac{1}{4}]} \rightarrow [x - \frac{1}{4}] + [x + \frac{1}{4}] \geq 0 \rightarrow [x + \frac{1}{4} - 1] + [x + \frac{1}{4}] \geq 0 \rightarrow [x + \frac{1}{4}] - 1 + [x + \frac{1}{4}] \geq 0 \rightarrow 2[x + \frac{1}{4}] \geq 1 \rightarrow [x + \frac{1}{4}] \geq \frac{1}{2} \rightarrow x + \frac{1}{4} \geq 1 \rightarrow x \geq \frac{3}{4} \rightarrow D_f = [\frac{3}{4}, \infty)$

ب) $y = \sqrt{[x - \frac{1}{4}] + [x + \frac{1}{4}]} \rightarrow \sqrt{[x - \frac{1}{4}] + [- (x - \frac{1}{4})]} \xrightarrow{\text{if } a \in \mathbb{Z} \quad [a] + [-a] = 0} \rightarrow x - \frac{1}{4} \in \mathbb{Z} \rightarrow D_f = \{x \mid x = k + \frac{1}{4}, k \in \mathbb{Z}\}$

الغ) $y = \frac{1}{\sqrt{\sin^2 x}} \rightarrow \sqrt{\sin^2 x} \neq 1 \rightarrow \sin^2 x \neq \frac{1}{4} \rightarrow \sin x \neq \pm \frac{\sqrt{1}}{2} \rightarrow D_f = [k\pi \pm \frac{\pi}{6}]$

ب) $y = \frac{\cot x + 1}{\tan x + 1} \quad \tan x \neq -1 \rightarrow D_f = \left[k\pi - \frac{\pi}{4} \right]$

الف) $y = \sqrt{2 \sin x - 1} \rightarrow 2 \sin x - 1 \geq 0 \rightarrow 2 \sin x \geq 1 \rightarrow \sin x \geq \frac{1}{2} \rightarrow D_f = \left[2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6} \right]$

ب) $y = \sqrt{1 - 2 \cos x} \quad 1 - 2 \cos x \geq 0 \rightarrow 2 \cos x \leq 1 \rightarrow \cos x \leq \frac{1}{2} \rightarrow D_f = \left[2k\pi + \frac{\pi}{3}, 2k\pi + \frac{5\pi}{3} \right]$