

الف) $y = \sqrt{t - \sqrt{2-x}} \rightarrow 2-x \geq 0 \rightarrow x \leq 2$ $\hookrightarrow t - \sqrt{2-x} \geq 0 \rightarrow \sqrt{2-x} \leq t \rightarrow 2-x \leq 14 \rightarrow x \geq -12$ $D_f = [-12, 2]$ ب) $\sqrt{3 - \sqrt{x-2}} \rightarrow x-2 \geq 0 \rightarrow x \geq 2$ $\hookrightarrow 3 - \sqrt{x-2} \geq 0 \rightarrow \sqrt{x-2} \leq 3 \rightarrow x-2 \leq 9 \rightarrow x \leq 11$ $D_f = [2, 11]$	1
الف) $y = \sqrt{t - 2x^2} \rightarrow t - 2x^2 \geq 0 \rightarrow 2x^2 \leq t \rightarrow x^2 \leq \frac{t}{2} \rightarrow \sqrt{\frac{t}{2}} \geq x \geq -\sqrt{\frac{t}{2}}$ $D_f = [-\sqrt{\frac{t}{2}}, \sqrt{\frac{t}{2}}]$ ب) $\sqrt{3 x -9} \rightarrow 3 x -9 \geq 0 \rightarrow 3 x \geq 9 \rightarrow x \geq 3$ $x \geq 3$ $x \leq -3$ $D_f = R - (-3, 3)$	2
الف) $y = \sqrt{\frac{ x +1}{ x -3}} \rightarrow x -3 \neq 0$ $x \neq 3 \rightarrow x \neq 3, -3$ $D_f = R - \{3, -3\}$ ب) $\sqrt{\frac{\sqrt{x}+1}{\sqrt{x}-3}} \rightarrow x \geq 0$ $\hookrightarrow \sqrt{x}-3 \neq 0$ $D_f = [0, +\infty) - \{9\}$ $\sqrt{x} \neq 3$ $x \neq 9$	3
الف) $y = \frac{\sqrt{3- x }}{ x +2}$ $\rightarrow 3- x \geq 0 \rightarrow x \leq 3 \rightarrow -3 \leq x \leq 3$ $D_f = [-3, 3]$ صفری ندارد ب) $y = \frac{\sqrt{t-x^2}}{ x -1} \rightarrow t-x^2 \geq 0 \rightarrow x^2 \leq t \rightarrow \sqrt{t} \geq x \geq -\sqrt{t}$ $D_f = [-\sqrt{t}, \sqrt{t}]$ $\hookrightarrow x -1 \neq 0$ $x \neq 1 \rightarrow x \neq 1, -1$ $D_f = [-\sqrt{t}, \sqrt{t}] - \{1, -1\}$	4
الف) $y = \frac{x+1}{\sqrt{x+ x }}$ $\rightarrow D_f = (0, +\infty)$ صفری و صفر ندارد ب) $y = \frac{1}{\sqrt{x x }}$ $\rightarrow D_f = (0, +\infty)$ صفری و صفر ندارد	5

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

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

$$\text{الف) } y = \frac{1}{x[x]} \rightarrow D_f = \mathbb{R} - \{0, 1\}$$

$$\text{ب) } y = \frac{1}{\sqrt{-x[x]}} \rightarrow \begin{array}{l} -x[x] > 0 \\ x[x] < 0 \end{array} \rightarrow D_f = \emptyset$$

$\text{ملاحظة: } x[x] > 0 \text{ لـ } x < 0$

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

$$\rightarrow \left[x + \frac{x}{x}\right] - 1 + \left[x + \frac{x}{x}\right] \geq 0 \rightarrow 2\left[x + \frac{x}{x}\right] \geq 1 \rightarrow \left[x + \frac{x}{x}\right] \geq \frac{1}{2} \rightarrow x + \frac{x}{x} \geq \frac{1}{2}$$

$$\rightarrow x \geq \frac{1}{4} \rightarrow D_f = \left[\frac{1}{4}, +\infty\right)$$

$$\text{ب) } y = \sqrt{\left(x - \frac{1}{x}\right) + \left[-x + \frac{1}{x}\right]} = \sqrt{\frac{\left(x - \frac{1}{x}\right) + \left(-x + \frac{1}{x}\right)}{a}}$$

$$\text{if } a \in \mathbb{Z} \rightarrow [a] + [-a] = 0$$

$$\text{if } a \notin \mathbb{Z} \rightarrow [a] + [-a] = -1 \quad \left\{ \begin{array}{l} x - \frac{1}{x} \in \mathbb{Z} \rightarrow D_f = \left\{ x \mid x = k + \frac{1}{x}, k \in \mathbb{Z} \right\} \end{array} \right.$$

$$\text{الف) } y = \frac{1}{r \sin^2 x - 1} \rightarrow r \sin^2 x - 1 \neq 0$$

$$r \sin^2 x \neq 1 \rightarrow \sin^2 x \neq \frac{1}{r}$$

$$\sin x \neq \pm \frac{1}{\sqrt{r}} \times \frac{\sqrt{r}}{\sqrt{r}} = \pm \frac{\sqrt{r}}{r}$$



$$D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{2}, k\pi - \frac{\pi}{2} \right\}$$

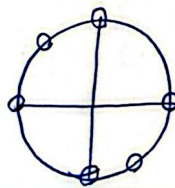
$$\text{ب) } y = \frac{\cot x + 1}{\tan x + 1} \rightarrow \frac{\cot x + 1}{\tan x + 1} \rightarrow \frac{\cos x + \sin x}{\sin x + \cos x}$$

$$\text{ملاحظة: } \tan x \neq -1 \rightarrow x \neq 135^\circ, 225^\circ$$

$$\tan x + 1 \neq 0$$

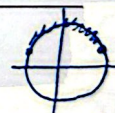
$$\tan x \neq -1$$

$$x \neq 135^\circ, 225^\circ$$



$$D_f = \mathbb{R} - \left\{ k\pi, k\pi + \frac{\pi}{2}, k\pi - \frac{\pi}{2} \right\}$$

$$\text{الف) } y = \sqrt{r \sin x - 1} \rightarrow r \sin x - 1 \geq 0 \rightarrow r \sin x \geq 1 \rightarrow \sin x \geq \frac{1}{r}$$



$$D_f = \left[k\pi + \frac{\pi}{2}, k\pi + \frac{\pi}{r} \right]$$

$$\text{ب) } y = \sqrt{1 - r \cos x} \rightarrow 1 - r \cos x \geq 0 \rightarrow r \cos x \leq 1 \rightarrow \cos x \leq \frac{1}{r}$$



$$D_f = \left[k\pi + \frac{\pi}{r}, k\pi + \frac{\pi}{2} \right]$$