

الف $y = \sqrt{4 - \sqrt{2-x}}$ $\Rightarrow 2-x \geq 0 \Rightarrow x \leq 2$ $4 - \sqrt{2-x} \geq 0 \Rightarrow 4 \geq \sqrt{2-x} \Rightarrow 16 \geq 2-x \Rightarrow x \geq -14$ $\Rightarrow D(y) = [-14, 2]$

ب $y = \sqrt{3 - \sqrt{x-2}}$ $\Rightarrow x-2 \geq 0 \Rightarrow x \geq 2$ $3 - \sqrt{x-2} \geq 0 \Rightarrow 3 \geq \sqrt{x-2} \Rightarrow 9 \geq x-2 \Rightarrow x \leq 11$ $\Rightarrow D(y) = [2, 11]$

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

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

الف $y = \sqrt{\frac{|x|+1}{|x|-3}}$ $\Rightarrow |x|-3 \neq 0 \Rightarrow |x| \neq 3 \Rightarrow x \neq \pm 3$ $D(y) = \mathbb{R} - \{\pm 3\}$

ب $y = \sqrt{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$ $\Rightarrow \sqrt{x}-3 \neq 0 \Rightarrow \sqrt{x} \neq 3 \Rightarrow x \neq 9$ $\Rightarrow D(y) = \mathbb{R} - \{9\}$

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

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

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

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

سوال ۲ را ابتدا و سوال ۳ بعد از آن در صفحه بیرون بکشید.

$$\text{الف) } y = \frac{x+1}{\sqrt{x+|x|}} \Rightarrow x+|x| > 0 \Rightarrow |x| > -x \Rightarrow x < 0$$

$$D(y) = (-\infty, 0)$$

$$\text{ب) } y = \frac{1}{\sqrt{x|x|}} \Rightarrow x|x| > 0 \Rightarrow x > 0$$

$$D(y) = (0, +\infty)$$

$$\text{الف) } y = \frac{1}{x[x]} \Rightarrow x[x] \neq 0 \Rightarrow x \neq [0, 1]$$

$$D(y) = \mathbb{R} - [0, 1]$$

$$\text{ب) } y = \frac{1}{\sqrt{-x[x]}} \Rightarrow -x[x] > 0$$

$$D(y) = \emptyset$$

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

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

$$D(y) = \mathbb{R}$$

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

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

$$D(y) = \left\{\frac{1}{x}\right\}$$

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

$$x \sin^2 x \neq 1 \Rightarrow \sin^2 x \neq \frac{1}{x}$$

$$D(y) = \mathbb{R} - \left\{\frac{k\pi}{2} + \frac{\pi}{2}, \frac{\pi}{2}\right\}, \frac{\omega\pi}{2}, \frac{\omega\pi}{2}$$

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

$$\sin x \neq 0 \Rightarrow x \neq k\pi, \pi$$

$$\cos x \neq 0 \Rightarrow x \neq \frac{\pi}{2}, \frac{3\pi}{2}$$

$$\text{الف) } y = \sqrt{2 \sin x - 1} \Rightarrow 2 \sin x - 1 \geq 0$$

$$2 \sin x \geq 1$$

$$\sin x \geq \frac{1}{2}$$

$$D(y) = \left[\frac{\pi}{6}, \frac{5\pi}{6}\right] \cup \left[\frac{7\pi}{6}, \frac{11\pi}{6}\right]$$

$$\text{ب) } y = \sqrt{1 - 2 \cos x} \Rightarrow 1 - 2 \cos x \geq 0$$

$$1 \geq 2 \cos x$$

$$\frac{1}{2} \geq \cos x \Rightarrow D(y) = \mathbb{R} - \left[\frac{\pi}{3}, \frac{2\pi}{3}\right] \cup \left[\frac{4\pi}{3}, \frac{5\pi}{3}\right]$$