

الف

$$\begin{cases} 2-x \geq 0 \Rightarrow x \leq 2 \\ 2-\sqrt{x} \geq 0 \Rightarrow 4 \geq \sqrt{x} \Rightarrow 16 \geq x \Rightarrow x \leq 16 \end{cases} \Rightarrow D_f = [-16, 2]$$

ب

$$\begin{cases} x-2 \geq 0 \Rightarrow x \geq 2 \\ 2-\sqrt{x-2} \geq 0 \Rightarrow 2 \geq \sqrt{x-2} \Rightarrow 4 \geq x-2 \Rightarrow x \leq 6 \end{cases} \Rightarrow D_f = [2, 6]$$

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

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

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

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

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

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

الف)  $\frac{x+1}{\sqrt{x+|x|}} \Rightarrow x+|x| > 0 \Rightarrow |x| > -x \Rightarrow D_f = \mathbb{R}^+$

ب)  $\frac{1}{\sqrt{x|x|}}$   $\oplus \checkmark$   $\ominus \times$   $\odot \times$   $D_f = \mathbb{R}^+$

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

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

الف)  $\frac{1}{x[x]} \Rightarrow x[x] = +\infty \Rightarrow D_f = \mathbb{R} - \{0\}$

ب)  $\frac{1}{\sqrt{-x[x]}} \Rightarrow -x[x] = -\infty \Rightarrow D_f = \emptyset$

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

ب)  $\sqrt{[x - \frac{1}{x}] + [-x + \frac{1}{x}]} \Rightarrow [x] + [-x] \Rightarrow a \in \mathbb{Z} \Rightarrow x - \frac{1}{x} \in \mathbb{Z} \Rightarrow x \in \mathbb{Z} + \frac{1}{x} \Rightarrow$

$D_f = \{x \mid x = k + \frac{1}{x}, k \in \mathbb{Z}\}$

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

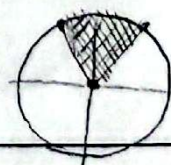
$D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4}\}$

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

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



ب)  $\sqrt{1 - 2 \cos x} \Rightarrow 1 - 2 \cos x \geq 0 \Rightarrow \frac{1}{2} \geq \cos x$



$D_f = [2k\pi + \frac{\pi}{3}, 2k\pi + \frac{5\pi}{3}]$