

سؤال 1

(الف) $y = \sqrt{4 - \sqrt{2-x}} \Rightarrow$

I: $2-x \geq 0 \rightarrow x \leq 2$

II: $4 - \sqrt{2-x} \geq 0 \rightarrow \sqrt{2-x} \leq 4 \rightarrow 2-x \leq (4 \rightarrow x \geq 14)$

$D_f = (-\infty, 2] \cup [14, +\infty)$

(ب) $y = \sqrt{3 - \sqrt{x-2}} \Rightarrow$ I: $x-2 \geq 0 \rightarrow x \geq 2$

II: $3 - \sqrt{x-2} \geq 0 \rightarrow \sqrt{x-2} \leq 3 \rightarrow x-2 \leq 9 \rightarrow x \leq 11$

$D_f = [2, 11]$

سؤال 2

(الف) $y = \sqrt{4 - 2x^2} \rightarrow 4 - 2x^2 \geq 0 \rightarrow 2x^2 \leq 4 \rightarrow x^2 \leq 2 \rightarrow -\sqrt{2} \leq x \leq \sqrt{2}$

$D_f = [-\sqrt{2}, \sqrt{2}]$

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

سؤال 3

(الف) $y = \sqrt[3]{\frac{|x|+1}{|x|-3}} \Rightarrow |x| \neq 3 \rightarrow D_f = \mathbb{R} - \{\pm 3\}$

(ب) $\sqrt[3]{\frac{\sqrt{x}+1}{\sqrt{x}-3}} \Rightarrow$ I: $x \geq 0$
II: $\sqrt{x}-3 \neq 0 \rightarrow \sqrt{x} \neq 3 \rightarrow x \neq 9 \rightarrow D_f = \mathbb{R}^+ - \{9\}$

سؤال 4

(الف) $y = \frac{\sqrt{3-|x|}}{|x|+2} \Rightarrow$ I: $|x| \leq 3$
II: $3-|x| \geq 0 \rightarrow |x| \leq 3 \rightarrow D_f = (-\infty, 3]$

(ب) $y = \frac{\sqrt{4-x^2}}{|x|-1} \Rightarrow$ I: $|x|-1 \neq 0 \rightarrow |x| \neq 1 \rightarrow x \neq \pm 1$
II: $4-x^2 \geq 0 \rightarrow x^2 \leq 4 \rightarrow -2 \leq x \leq 2$

$\rightarrow D_f = [-2, 2] - \{\pm 1\}$

سؤال 5

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

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

سؤال ٤

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

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

سؤال ٥

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

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

سؤال ٦

الف) $y = \sqrt{[x - \frac{1}{p}] + [x + \frac{p}{p}]} \rightarrow [x + \frac{p}{p} - 1] + [x + \frac{p}{p}] \geq 0$

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

$\rightarrow x + \frac{p}{p} \geq \frac{1}{2} \rightarrow x \geq \frac{1}{2} - \frac{p}{p} \rightarrow D_f = [\frac{1}{2} - \frac{p}{p}, +\infty)$

ب) $y = \sqrt{[x - \frac{1}{p}] + [-x + \frac{1}{p}]} \Rightarrow D_f = \{x | x = k + \frac{1}{p}, k \in \mathbb{Z}\}$

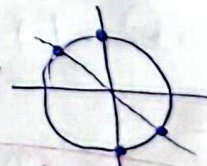
سؤال ٧

الف) $y = \frac{1}{r \sin x - 1} \rightarrow r \sin x - 1 \neq 0 \rightarrow \sin x \neq \pm \sqrt{\frac{1}{r}}, \frac{\sqrt{r}}{r}$

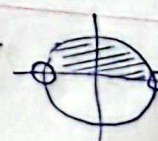
$\rightarrow \sin x \neq \frac{\sqrt{r}}{r} \rightarrow D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{r}\}$

ب) $\frac{\cot x + 1}{\tan x + 1} \Rightarrow \tan x \neq -1$

$\Rightarrow D_f = \mathbb{R} - \{k\pi + \frac{\pi}{r}, k\pi - \frac{\pi}{r}\}$



سؤال ٨: $y = \sqrt{r \sin x - 1} \rightarrow r \sin x - 1 \geq 0 \rightarrow \sin x \geq \frac{1}{r}$



$D_f = [r\pi, r\pi + \eta]$

ب) $y = \sqrt{1 - r \cos x} \rightarrow 1 - r \cos x \geq 0 \rightarrow \cos x \leq \frac{1}{r} \rightarrow D_f = [r\pi - \pi, r\pi]$

