

الف) $y = \sqrt{4 - \sqrt{2 - x}}$ $\rightarrow 1 - x \geq 0 \Rightarrow x \leq 1$ $\rightarrow 1^2 - \sqrt{1 - x} \geq 0 \Rightarrow 1^2 \geq \sqrt{1 - x}$

$\Rightarrow 14 \geq 1 - x \Rightarrow x \geq -14 \Rightarrow D_f = [-14, 1]$

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

$\Rightarrow 9 \geq x - 1 \Rightarrow 11 \geq x \Rightarrow D_f = [1, 11]$

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

ب) $y = \sqrt{2|x| - 9} \rightarrow 2|x| - 9 \geq 0 \Rightarrow 2|x| \geq 9 \Rightarrow |x| \geq \frac{9}{2} \Rightarrow x \leq -\frac{9}{2}$ ^{اجتناباً} $x \geq \frac{9}{2}$
 $D_f = (-\infty, -\frac{9}{2}] \cup [\frac{9}{2}, +\infty)$

الف) $y = \sqrt{\frac{|x| + 1}{|x| - 2}}$ $\rightarrow |x| - 2 \neq 0 \Rightarrow |x| \neq 2 \Rightarrow x \neq \pm 2 \Rightarrow D_f = \mathbb{R} - \{2, -2\}$
 $\sqrt{x - 2} \geq 0, x \geq 0, \sqrt{x - 2} \neq 0 \Rightarrow \sqrt{x} \neq 2 \Rightarrow x \neq 4 \Rightarrow D_f = [2, +\infty) - \{4\}$

الف) $y = \sqrt{1 - |x|} \rightarrow 1 - |x| \geq 0 \Rightarrow |x| \leq 1 \Rightarrow 1 \geq x \geq -1$
 $|x| + 1 \rightarrow$ هوامه مثبت $D_f = [1, -1]$

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

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

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

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

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

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

ب) $y = \frac{1}{-x[x]}$ $\Rightarrow$ همواره منفی و صفر باشد $\Rightarrow$ تابع نمی‌باشد

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

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

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

ب) $y = \sqrt{\left[x - \frac{1}{x}\right] + \left[-x + \frac{1}{x}\right]}$ $\Rightarrow \left[x - \frac{1}{x}\right] + \left[-\left(x - \frac{1}{x}\right)\right] \Rightarrow x - \frac{1}{x} \in \mathbb{Z}$

$D_f = \left\{x / x = k + \frac{1}{x}, k \in \mathbb{Z}\right\}$

الف) $y = \frac{1}{2 \sin^2 x - 1}$ $\Rightarrow 2 \sin^2 x - 1 \neq 0 \Rightarrow 2 \sin^2 x \neq 1 \Rightarrow \sin^2 x \neq \frac{1}{2} \Rightarrow \sin x \neq \pm \frac{\sqrt{2}}{2}$
 $\Rightarrow D_f = \mathbb{R} - \left\{\frac{k\pi}{2} + \frac{\pi}{4}\right\}$

ب) $y = \frac{\cot x + 1}{\tan x + 1}$ $\Rightarrow \tan x + 1 \neq 0 \Rightarrow \tan x \neq -1$ $\cot \tan$ باید تعریف شده باشند
 $D_f = \mathbb{R} - \left\{\frac{k\pi}{2}, k\pi - \frac{\pi}{4}\right\}$

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

$D_f = \left[2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}\right]$

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

$D_f = \left[2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3}\right]$