

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

$\Rightarrow 1^2 \geq 1 - x \Rightarrow x \geq -1$   $\Rightarrow D_f = [-1, 1]$

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

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

الف)  $y = \sqrt{4 - 1^2 x^2} = \sqrt{4 - 1^2 x^2} \geq 0 \Rightarrow 1^2 x^2 \leq 4 \Rightarrow x^2 \leq 2 \Rightarrow \sqrt{2} \geq x \geq -\sqrt{2}$   
 $D_f = [-\sqrt{2}, \sqrt{2}]$

ب)  $y = \sqrt{1^2 |x| - 9} \rightarrow 1^2 |x| - 9 \geq 0 \Rightarrow 1^2 |x| \geq 9 \Rightarrow |x| \geq 3 \Rightarrow x \leq -3$  <sup>اجتهاد</sup>  $x \geq 3$   
 $D_f = (-\infty, -3] \cup [3, +\infty)$

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

الف)  $y = \sqrt{1^2 - |x|} \rightarrow 1^2 - |x| \geq 0 \Rightarrow |x| \leq 1^2 \Rightarrow 1^2 \geq x \geq -1^2$   
 $|x| + 1 \rightarrow$  هوامه مثبت  $D_f = [1, 1]$

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

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)  $y = \sqrt{1 - [x]} \rightarrow 1 - [x] \geq 0 \Rightarrow [x] \leq 1 \Rightarrow D_f = (-\infty, 1]$

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



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)  $y = \sqrt{x - \frac{1}{3}} + [x + \frac{1}{3}]$   $\Rightarrow [x - \frac{1}{3}] + [x + \frac{1}{3}] \geq 0 \Rightarrow [x + \frac{1}{3} - 1] + [x + \frac{1}{3}] \geq 0$

$\Rightarrow 2[x + \frac{1}{3}] - 1 \geq 0 \Rightarrow 2[x + \frac{1}{3}] \geq 1 \Rightarrow [x + \frac{1}{3}] \geq \frac{1}{2} \Rightarrow x + \frac{1}{3} \geq 1 \Rightarrow x \geq \frac{1}{3}$

$\Rightarrow D_f = [\frac{1}{3}, +\infty)$

ب)  $y = \sqrt{x - \frac{1}{3}} + [-x + \frac{1}{3}]$   $\Rightarrow [x - \frac{1}{3}] + [-(x - \frac{1}{3})] \Rightarrow x - \frac{1}{3} \in \mathbb{Z}$

$D_f = \{x / x = k + \frac{1}{3}, k \in \mathbb{Z}\}$

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

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

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

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

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

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