

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

ب) $y = \sqrt{2-x-2} \Rightarrow \sqrt{x-2} \geq 0 \Rightarrow x \geq 2$ $D_f = [2, 11]$ ✓
 $\Rightarrow 2-\sqrt{x-2} \geq 0 \Rightarrow 2 \geq \sqrt{x-2} \Rightarrow 9 \geq x-2 \Rightarrow x = 11 \Rightarrow x \leq 11$ (۲)

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

ب) $y = \sqrt{3|x|-9} \Rightarrow \sqrt{3|x|-9} \geq 0 \Rightarrow 3|x|-9 \geq 0 \Rightarrow 3|x| \geq 9 \Rightarrow x \geq 3$
 $\Rightarrow x \leq -3$
 $D_f = (-\infty, -3] \cup [3, +\infty)$ ✓ (۲)

الف) $y = \sqrt{\frac{|x|+1}{|x|-3}} \Rightarrow |x|-3 \neq 0 \Rightarrow x \neq -3, 3 \Rightarrow D_f = \mathbb{R} - \{-3, 3\}$ ✓
 $\mathbb{R} - \{\pm 3\}$ تمام اعداد حقیقی به جز ۳ و -۳

ب) $y = \sqrt{\frac{\sqrt{x}+1}{\sqrt{x}-3}} \Rightarrow \sqrt{x}-3 \neq 0 \Rightarrow x-9 \neq 0 \Rightarrow D_f = \mathbb{R}^+ - \{9\}$ (۲)
 $[0, +\infty) - \{9\}$

الف) $y = \frac{\sqrt{2-|x|}}{|x|+2} \Rightarrow \sqrt{2-|x|} \geq 0 \Rightarrow 2-|x| \geq 0 \Rightarrow |x| \leq 2 \Rightarrow x \in [-2, 2]$ (۱, ۷)
 $D_f = [-2, 2]$ ✓

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

الف) $y = \frac{x+1}{\sqrt{x+|x|}} \Rightarrow x+|x| > 0$
 $\left. \begin{array}{l} + \text{ اگر } x \geq 0 \\ - \text{ اگر } x < 0 \end{array} \right\} \Rightarrow D_f = \mathbb{R}^+ \cup (0, +\infty)$ ✓ (۲)

ب) $y = \frac{1}{\sqrt{x|x|}} \Rightarrow x|x| > 0$
 $\left. \begin{array}{l} + \text{ اگر } x \geq 0 \\ - \text{ اگر } x < 0 \end{array} \right\} \Rightarrow D_f = \mathbb{R}^+ \cup (0, +\infty)$ ✓

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

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

الف) $y = \frac{1}{x[x]} \rightarrow x[x] \neq 0 \rightarrow D_f = (-\infty, 0) \cup [1, +\infty)$ ✓

ب) $y = \frac{1}{\sqrt{-x[x]}} \rightarrow -x[x] > 0 \rightarrow$ این مجموعه تهی است $\rightarrow D_f = \emptyset$ ✓

الف) $y = \sqrt{[x - \frac{1}{2}] + [x + \frac{1}{2}]} \rightarrow [x - \frac{1}{2}] + [x + \frac{1}{2}] \geq 0 \rightarrow [x - \frac{1}{2}] + [x - \frac{1}{2} + 1] \geq 0$
 $\Rightarrow 2[x - \frac{1}{2}] \geq -1 \rightarrow [x - \frac{1}{2}] \geq -\frac{1}{2} \rightarrow x \geq \frac{1}{2} \rightarrow D_f = [\frac{1}{2}, +\infty)$ (1,5) ✓

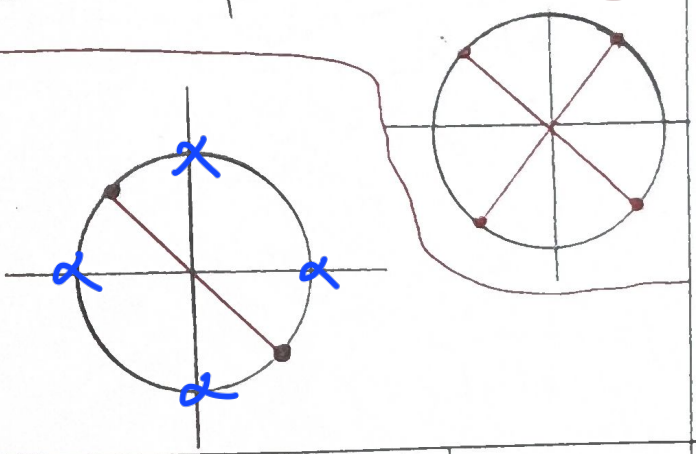
ب) $y = \sqrt{\frac{[x - \frac{1}{2}] + [-x + \frac{1}{2}]}{a - (x - \frac{1}{2}) - a}}$ if $a \in \mathbb{Z} \rightarrow [a] + [-a] = 0$
 $a \notin \mathbb{Z} \rightarrow [a] + [-a] = -1 \rightarrow x - \frac{1}{2} \in \mathbb{Z}$ (1,5) ✓
 $D_f = \{x \mid x = k + \frac{1}{2}, k \in \mathbb{Z}\}$ ✓

الف) $y = \frac{1}{2\sin^2 x - 1} \rightarrow 2\sin^2 x - 1 \neq 0 \rightarrow 2\sin^2 x \neq 1 \rightarrow \sin^2 x \neq \frac{1}{2}$ (1,5)

$\rightarrow D_f = \mathbb{R} - \{\frac{k\pi}{2} + \frac{\pi}{4}\}$ $\tan x \neq 0$ $\cot x \neq 0$

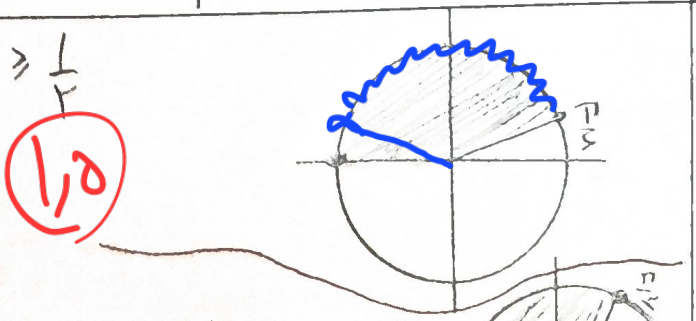
ب) $y = \frac{\cot x + 1}{\tan x + 1} \rightarrow \tan x + 1 \neq 0 \rightarrow \tan x \neq -1$

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



الف) $\sqrt{2\sin x - 1} \rightarrow 2\sin x - 1 \geq 0 \rightarrow 2\sin x \geq 1 \rightarrow \sin x \geq \frac{1}{2}$ (1,5)

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



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

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

