

الف) $y = \sqrt{4 - \sqrt{2-x}} \rightarrow \begin{cases} 2-x \geq 0 \Rightarrow \boxed{x \leq 2} \text{ ①} \\ 4 - \sqrt{2-x} \geq 0 \Rightarrow 4 \geq \sqrt{2-x} \xrightarrow{\text{بهر توان}} 14 \geq 2-x \\ x \geq -14 \text{ ②} \end{cases} D_f = 1 \cap 2 = [-14, 2]$

ب) $y = \sqrt{3 - \sqrt{x-2}} \rightarrow \begin{cases} x-2 \geq 0 \Rightarrow \boxed{x \geq 2} \text{ ①} \\ 3 - \sqrt{x-2} \geq 0 \Rightarrow 3 \geq \sqrt{x-2} \xrightarrow{\text{بهر توان}} 9 \geq x-2 \\ x \leq 11 \text{ ②} \end{cases} D_f = 1 \cap 2 = [2, 11]$

الف) $y = \sqrt{4 - 2x^2} \rightarrow 4 - 2x^2 \geq 0 \Rightarrow 4 \geq 2x^2 \Rightarrow \frac{4}{2} \geq x^2 \Rightarrow 2 \geq x^2 \rightarrow \boxed{\sqrt{2} \geq x}$ سوال 2 (1)
 $x^2 \leq 2 \rightarrow -\sqrt{2} \leq x \leq \sqrt{2}$
 $D_f = \mathbb{R} - (-\infty, \sqrt{2}] \cup [-\sqrt{2}, \sqrt{2}]$

ب) $y = \sqrt{3|x|-9} \rightarrow 3|x|-9 \geq 0 \Rightarrow 3|x| \geq 9 \Rightarrow \frac{3|x|}{3} \geq \frac{9}{3} \Rightarrow |x| \geq 3 \rightarrow \begin{cases} x \geq 3 \text{ ①} \\ x \leq -3 \text{ ②} \end{cases} D_f = [-3, 3]$
 $D_f = \mathbb{R} - (-3, 3)$

الف) $y = \sqrt[3]{\frac{|x|+1}{|x|-3}}$ سوال 3 (2)
 !برضورتاً بشود مدرسه ندارد $\Rightarrow |x|-3 \neq 0 \rightarrow |x| \neq \pm 3$
 $D_f = \mathbb{R} - \{\pm 3\}$

ب) $y = \sqrt[3]{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$ $\begin{cases} \sqrt{x} \geq 0 \rightarrow x \geq 0 \\ \sqrt{x}-3 \neq 0 \Rightarrow \sqrt{x} \neq 3 \rightarrow x \neq 9 \end{cases} D_f = [0, +\infty) - \{9\}$

الف) $y = \frac{\sqrt{3-|x|}}{|x|+2}$ سوال 4 (1)
 $\begin{cases} 3-|x| \geq 0 \rightarrow 3 \geq |x| \Rightarrow |x| \leq 3 \rightarrow -3 \leq x \leq 3 \\ |x|+2 \neq 0 \rightarrow |x| \neq -2 \end{cases}$
 $D_f = ① \cap ② = [-3, 3] - \{\pm 2\}$
 $\hookrightarrow x \neq \pm 2$

ب) $y = \frac{\sqrt{4-x^2}}{|x|-1}$ $\begin{cases} 4-x^2 \geq 0 \rightarrow 4 \geq x^2 \rightarrow \boxed{2 \geq x} \text{ ①} \\ |x|-1 \neq 0 \rightarrow |x| \neq 1 \rightarrow \boxed{x \neq \pm 1} \text{ ②} \end{cases} x^2 \leq 4 \rightarrow -2 \leq x \leq 2$
 $D_f = [2, +\infty) - \{\pm 1\}$
 $D_f = [-2, 2] - \{\pm 1\}$

سوال 5 (۲)

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

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

سوال 6

الف) $y = \sqrt{2-x}$ $2-x \geq 0 \Rightarrow 2 \geq x \rightarrow x \leq 2$ $D_f = (-\infty, 2]$ (۲)

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

سوال 7

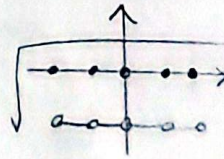
الف) $y = \frac{1}{x[x]}$ $x[x] > 0 \Rightarrow$ $\begin{matrix} x, [x] \text{ هر دو علامت های} \\ \text{متنایند، لذا در این صورت آن ها} \\ \text{در هم علامت } > 0 \text{ است} \end{matrix}$ $\Rightarrow D_f = \mathbb{R}$ (۱.۵)

$x \neq 0$
 $[x] \neq 0 \rightarrow D_f = \mathbb{R} - \{0\}$

ب) $y = \frac{1}{\sqrt{-x[x]}}$ $-x[x] > 0 \Rightarrow x[x] < 0 \rightarrow D_f = \mathbb{R} - \{0\}$
 $D_f \neq \emptyset$
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سوال 8

الف) $y = \sqrt{[x - \frac{1}{p}] + [x + \frac{p}{p}]}$ $[x - \frac{1}{p}] + [x + \frac{p}{p}] \geq 0 \rightarrow [x - \frac{1}{p} + 1] + [x + \frac{p}{p}] \geq 1$ (۱.۵)
 $[x + \frac{p}{p}] + [x + \frac{p}{p}] \geq 1 \rightarrow 2[x + \frac{p}{p}] \geq 1 \rightarrow [x + \frac{p}{p}] \geq \frac{1}{2} \Rightarrow x + \frac{p}{p} \geq \frac{1}{2}$
 $x + \frac{p}{p} \geq 1 \rightarrow x \geq \frac{1}{p}$ $D_f = [\frac{1}{p}, +\infty)$ $x \geq \frac{1}{p} - \frac{p}{p} = \frac{p-1}{p} = \frac{1}{p}$

ب) $y = \sqrt{[x - \frac{1}{p}] + [-x + \frac{1}{p}]}$ $y = [x] + [-x]$ 
 $\sqrt{[x - \frac{1}{p}] + [-x + \frac{1}{p}]} \rightarrow a \in \mathbb{Z} \quad [a] + [-a] = 0 \Rightarrow x - \frac{1}{p} \in \mathbb{Z}$
 $a \notin \mathbb{Z} \quad [a] + [-a] = -1$
 $D_f = \{x | x = k + \frac{1}{p}, (k \in \mathbb{Z})\}$ ✓

(۱.۵)

الف) $y = \sqrt{2 \sin x - 1}$ $2 \sin x - 1 \geq 0$ سوال ۱۰ (۲)
 $2 \sin x \geq 1 \rightarrow \sin x \geq \frac{1}{2}$
 $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4}\}$

ب) $y = \sqrt{1 - 2 \cos x}$ $1 - 2 \cos x \geq 0$
 $1 \geq 2 \cos x \rightarrow \frac{1}{2} \geq \cos x$
 $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{3}, 2k\pi + \frac{5\pi}{3}\}$

الف) $y = \frac{1}{2 \sin^2 x - 1}$ $2 \sin^2 x - 1 \neq 0$ سوال ۹
 $2 \sin^2 x \neq 1$
 $\sin x \neq \pm \frac{\sqrt{2}}{2}$
 $\sin^2 x \neq \frac{1}{2} \rightarrow \sin x \neq \pm \frac{\sqrt{2}}{2}$
 $\sin x \neq \pm \frac{1}{\sqrt{2}}$
ب) $y = \frac{\cot x + 1}{\cot x}$ $\cot x + 1 \neq 0$
 $\cot x \neq -1$
 $D_f = \mathbb{R} - \{2k\pi + \frac{3\pi}{4}, 2k\pi + \frac{7\pi}{4}\}, \frac{k\pi}{2}$