

$$\text{الف) } y = \sqrt{4 - \sqrt{2-x}} \rightarrow \begin{cases} 2-x \geq 0 \rightarrow x \leq 2 \\ 4 - \sqrt{2-x} \geq 0 \rightarrow x \geq -14 \end{cases} \xrightarrow{U} -14 \leq x \leq 2$$

$$D_f = [-14, 2]$$

$$\text{ب) } y = \sqrt{3 - \sqrt{x-2}} \rightarrow \begin{cases} x-2 \geq 0 \rightarrow x \geq 2 \\ 3 - \sqrt{x-2} \geq 0 \rightarrow x \leq 11 \end{cases} \xrightarrow{U} 2 \leq x \leq 11$$

$$D_f = [2, 11]$$

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

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

$$\text{ب) } y = \sqrt{3|x|-9} \rightarrow 3|x|-9 \geq 0 \rightarrow |x| \geq 3 \rightarrow \begin{cases} x \geq 3 \\ x \leq -3 \end{cases} \quad D_f = (-\infty, -3] \cup [3, +\infty)$$

$$\text{الف) } y = \sqrt[3]{\frac{|x|+1}{|x|-2}} \rightarrow |x| \neq 2 \rightarrow x \neq \pm 2 \quad D_f = \mathbb{R} - \{\pm 2\}$$

$$\text{ب) } y = \sqrt[3]{\frac{\sqrt{x}+1}{\sqrt{x}-2}} \rightarrow \begin{cases} \sqrt{x} \neq 2 \\ x \geq 0 \end{cases} \rightarrow x \neq 4 \quad D_f = [0, +\infty) - \{4\}$$

$$\text{الف) } y = \frac{\sqrt{3-|x|}}{|x|+2} \rightarrow \begin{cases} 3-|x| \geq 0 \rightarrow |x| \leq 3 \rightarrow -3 \leq |x| \leq 3 \\ |x| \neq -2 \end{cases} \rightarrow D_f = [-3, 3]$$

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

$$\text{الف) } y = \frac{x+1}{\sqrt{x+|x|}} \rightarrow x+|x| > 0 \quad \begin{matrix} \oplus \checkmark \\ \odot \times \\ \ominus \times \end{matrix} \quad D_f = \mathbb{R}^+$$

$$\text{ب) } y = \frac{1}{\sqrt{x|x|}} \rightarrow x|x| > 0 \quad \begin{matrix} \oplus \checkmark (+) \times (+) = + \\ \odot \times \circ \times \circ \circ = / \\ \ominus \times (-) \times (+) = (-) \end{matrix} \quad D_f = \mathbb{R}^+$$

$$\text{الف) } y = \sqrt{2-x} \rightarrow 2-x \geq 0 \rightarrow [x] \leq 2 \rightarrow x < 3 \quad D_f = (-\infty, 3)$$

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$$\text{ب) } y = \frac{1}{\sqrt{2-x}} \rightarrow 2-x > 0 \rightarrow [x] < 2 \rightarrow x < 3 \quad D_f = (-\infty, 3)$$

$$\text{الف) } y = \frac{1}{x[x]} \xrightarrow{x \neq 0} x[x] \neq 0 \rightarrow [x] \neq 0 \rightarrow 0 \leq x < 1 \quad D_f = \mathbb{R} - [0, 1)$$

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$$\text{ب) } y = \frac{1}{\sqrt{-x[x]}} \rightarrow -x[x] > 0 \rightarrow x[x] < 0 \quad \times \quad \emptyset$$

↑
* x و [x] همیشه علامت هستند و ضرب آنها همواره منفی می باشد

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

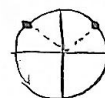
$$2\left[x + \frac{x}{x}\right] \geq 1 \rightarrow \left[x + \frac{x}{x}\right] \geq \frac{1}{2} \rightarrow x + \frac{x}{x} \geq 1 \rightarrow x \geq \frac{1}{x} \quad D_f = \left[\frac{1}{x}, +\infty\right)$$

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$$\text{ب) } y = \sqrt{\left[x - \frac{1}{x}\right] + \left[-x + \frac{1}{x}\right]} \Rightarrow \sqrt{\left[x - \frac{1}{x}\right] + \left[-\left(x - \frac{1}{x}\right)\right]} \xrightarrow{\text{if}} \begin{cases} a \in \mathbb{Z} & [a] + [-a] = 0 \\ a \notin \mathbb{Z} & [a] + [-a] = -1 \end{cases}$$

$$\rightarrow x - \frac{1}{x} \in \mathbb{Z} \quad D_f = \left\{x \mid x = k + \frac{1}{x}, k \in \mathbb{Z}\right\}$$

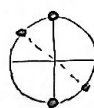
$$\text{الف) } y = \frac{1}{x \sin^2 x - 1} \rightarrow x \sin^2 x - 1 \neq 0 \rightarrow \sin x \neq \sqrt{\frac{1}{x}} \frac{x \sqrt{x}}{x \sqrt{x}} \rightarrow \sin x \neq \frac{\sqrt{x}}{x}$$



$$D_f = \mathbb{R} - \left\{k\pi + \frac{\pi}{2}, k\pi + \frac{\pi}{2}\right\}$$

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$$\text{ب) } y = \frac{\cot x + 1}{\tan x + 1} \rightarrow \begin{cases} \tan x + 1 \neq 0 \rightarrow \tan x \neq -1 \\ \cos x \neq 0 \end{cases}$$



$$D_f = \mathbb{R} - \left\{k\pi + \frac{\pi}{2}, k\pi + \frac{\pi}{2}\right\}$$

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



$$D_f = \left[k\pi + \frac{\pi}{4}, k\pi + \frac{5\pi}{4}\right]$$

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



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

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