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الف) $x^3 - x \neq 0 \Rightarrow x \neq \pm 1$ و 0 $\frac{x^3 - x}{x^2 - 1} \rightarrow 0$ و -1 $\frac{-1}{-1+1} + \frac{1}{1+1} + \frac{0}{0+0} + \frac{0}{0+0}$

$D_f = (-1, 1) \cup [2, +\infty) - \{0\}$

ب) $x^3 - x \neq 0 \Rightarrow x \neq \pm 1$ و 0 $\frac{x^3 - x}{x^2 - 1} \rightarrow 1$ و -1 $\frac{1}{1-1} \geq 0 \Rightarrow \frac{-1}{-1-1} \geq 0$

$D_f = \mathbb{R} - \{-1, 0, 1\}$

الف) $\sqrt{x+|x|} \neq 0$, $x+|x| > 0$ $\frac{x+|x|}{x} \rightarrow +$ $\frac{0}{0} \rightarrow 0$ $\frac{-}{-} \rightarrow 0$ $D_f = (0, +\infty)$

ب) $\sqrt{x|x|} \neq 0$ $\frac{x|x|}{x} \rightarrow +$ $\frac{0}{0} \rightarrow 0$ $\frac{-}{-} \rightarrow -$ $D_f = (0, +\infty)$

الف) $\lfloor x \rfloor \geq 0$ $\lfloor x \rfloor \leq 2 \rightarrow x < 3$ $D_f = (-\infty, 3)$

ب) $\sqrt{2 - \lfloor x \rfloor} \neq 0$ $\left. \begin{matrix} 2 - \lfloor x \rfloor > 0 \\ 2 - \lfloor x \rfloor \geq 0 \end{matrix} \right\} \Rightarrow D_f = (-\infty, 2)$

الف) $\left[x - \frac{1}{x} \right] + \left[x + \frac{1}{x} \right] \geq 0$ $\left. \begin{matrix} \frac{1}{x} \left[x + \frac{1}{x} \right] \geq \frac{1}{x} \Rightarrow x + \frac{1}{x} \geq 1 \end{matrix} \right\} x \geq \frac{1}{x}$ $D_f = \left[\frac{1}{x}, +\infty \right)$

ب) $\left[x - \frac{1}{x} \right] + \left[-\left(x - \frac{1}{x} \right) \right] \geq 0$ $\left. \begin{matrix} a \in \mathbb{Z} \rightarrow [a] + [-a] = 0 \\ a \in \mathbb{Z} \rightarrow [a] + [-a] = -1 \end{matrix} \right\} D_f =$

$D_f = \{ x \mid x = k \neq \frac{1}{x} \text{ و } k \in \mathbb{Z} \} \rightarrow$ جواب (ب) صحیح

الف) $\sin x - 1 \neq 0$ $\sin x \neq 1 \rightarrow x \neq 90^\circ$ و 270° $\frac{1}{\sin x} - 1 \neq 0$ $\sin x \neq \frac{1}{x}$ $\left. \begin{matrix} \sin x \neq \pm \frac{\sqrt{x}}{x} \\ x \neq 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 \end{matrix} \right\}$

$D_f = \mathbb{R} - \{ k\pi + \frac{\pi}{2} \}$ $D_f = \mathbb{R} - \{ \frac{k\pi}{x} + \frac{\pi}{x} \}$

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

$$D_f = \left[\gamma_{KM} + \frac{\pi}{\gamma}, \gamma_{KM} + \frac{2\pi}{\gamma} \right]$$

۲)

$$\cos u - 1 \geq 0 \quad \cos u \geq 1 \quad D_f = \{x \mid x \in \pi\}$$

$\cos y = |x| - 3$ (الف)
 $\left. \begin{array}{l} -1 \leq |x| - 3 \leq 1 \\ 2 \leq |x| \leq 4 \end{array} \right\} \begin{array}{l} x \geq 2 \text{ و } x \leq -2 \\ \text{استر بااید بلیدی} \end{array}$

$$D_f = (-\infty, -1] \cup [1, \infty) \cup [-1, 1]$$

$$[-f, -r] \cup [r, f]$$

b) $x^2 + 1 \geq -1$

$$n^2 + 2n + 2 \geq 0$$

$$(n_1+1)(n_1+2) \geq 0.$$

$$\begin{array}{c} -2 \quad -1 \\ \hline + \quad 0 \quad - \quad 0 \quad + \end{array} \quad \begin{array}{l} x^2 + 3x + 1 \leq 1 \\ x^2 + 3x \leq 0 \end{array}$$

$$0 \leftarrow x(x+1) \leq 0$$

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$-3 \quad 0$

$+ \quad - \quad +$

$$0 \leftarrow x(x+r) \leq 0 \quad DF = \begin{bmatrix} -\frac{1}{2} & -r \end{bmatrix} \cup \begin{bmatrix} -1 & 0 \end{bmatrix}$$

$$\text{ii) } x - \log_r^{(x-r)} > 0 \quad \log_r^{(x-r)} \leq r \rightarrow x-r \leq r^r \rightarrow x-r \leq 9 \rightarrow x \leq 11$$

$$x-r > 0 \rightarrow x > r \quad Df = (r, 11]$$

$$n - r > 0 \Rightarrow n > r \quad Df = (r, 1]$$

$\therefore x - x^2 > 0$
 $x^2 - x < 0$
 $x(x-1) < 0$
 $\begin{array}{c} \uparrow \\ x \end{array} \quad \begin{array}{c} \downarrow \\ x-1 \end{array}$
 $\begin{array}{c} -1 \quad 0 \quad +1 \\ - \quad + \quad - \quad + \end{array}$
 $D_f = (-1, 0) \cup (1, \infty)$

ii) $\exists x+1 \in w \quad x \in \frac{w-1}{f} \quad D_f = \{x \mid x \pm \frac{k-1}{f}, k \in w\}$

$$\hookrightarrow) \frac{r_{n-1}}{r_{n-2}} \in W \quad n \in -\frac{-aw+1}{r_{w-1}} \quad n \in \frac{aw-1}{r_{w-1}} \quad D_f = \left\{ n \mid n = \frac{wk-1}{rk-1}, k \in W \right\}$$

الف) $f_{n+1}^3 \rightarrow \text{هو } + \Rightarrow D_f = \mathbb{R}$

c) $f^n - 1 \neq 0$ $f^n \neq 1$

$$x \neq 0 \Rightarrow D_f = \mathbb{R} - \{0\}$$

c.) $\overset{x}{f} - \overset{x}{x} \neq 0 \quad \overset{x}{f} \neq \overset{x}{x} \Rightarrow \text{Log } \overset{x}{f} \neq \overset{x}{x} \quad \Rightarrow) \quad \overset{x}{f} - \overset{x}{x} \neq 0 \quad \overset{x}{f} \neq \overset{x}{x}$

$$Df = \mathbb{R} - \{\log^2 e\}$$

$$a \neq \log^* D_f = 1R - \{\log^* \epsilon\}$$