

بہنا

الف) $y = \frac{x+3}{2x^3 + 3x^2 - 1x + 3} \Rightarrow 2x^3 + 3x^2 - 1x + 3 \neq 0$

$$\Rightarrow (n-1)(n+1)\left(n - \frac{1}{r}\right) \neq 0 \Rightarrow D_f = \mathbb{R} - \left\{-r, \frac{1}{r}, 1\right\}$$

$$\frac{r^2 n^r + r^2 n^r - 1 n^r + r^2}{n-1} = \frac{r^2 n^r + r^2 n^r - 1 n^r + r^2}{n-1}$$

$$\text{b.) } y = \frac{x+w}{rx^w + 9x^y + 10x + w} \Rightarrow rx^w + 9x^y + 10x + w \neq 0$$

$$\Rightarrow (n+1) \left(r_n r_{n+1} + \underbrace{v_n}_{+ \mu_n} + w \right) \Rightarrow D_f = \mathbb{R} - \{-1\}$$

$$\begin{array}{r} 2x^3 + 9x^2 + 10x + 3 \mid x+1 \\ \underline{2x^3 + 2x^2} \\ 7x^2 + 10x + 3 \\ \underline{7x^2 + 7x} \\ 3x + 3 \\ \underline{3x + 3} \\ 0 \end{array}$$

الف) $y = \frac{x+3}{x^3-2x^2+2x-1} \Rightarrow x^3-2x^2+2x-1 \neq 0$

$$\Rightarrow (n-1)(n^2 - n + 1) \neq 0 \Rightarrow Df = \mathbb{R} - \{1\}$$

$$\frac{x^3 - 2x^2 + 2x - 1}{x - 1} = x^2 - x + 1$$

$$\Delta = 1 - 4 < 0$$

$$\underline{b)} \quad y = \sqrt{\frac{n+3}{n^2 - 2n^2 + 2n - 1}} \Rightarrow \frac{n+3}{(n-1)(n-1)} \geq 0$$

$$\begin{array}{c} -3 \qquad 1 \\ + \quad | \quad - \quad | \quad + \\ \hline \end{array} \Rightarrow D_f = (-\infty, -3] \cup (1, +\infty)$$

$$\begin{array}{r} x^3 - 2x^2 + 2x - 1 \quad | \quad x-1 \\ \underline{-(x^3 - x^2)} \\ x^2 + 2x - 1 \\ \underline{-(x^2 - x)} \\ 3x - 1 \\ \underline{-(3x - 3)} \\ 2 \end{array}$$

$$y = \frac{r}{x^2 - \omega|x-1| - 2x + \omega} \Rightarrow x^2 - \omega|x-1| - 2x + \omega \neq 0$$

سوال ٣

$$x \geq 1 \Rightarrow x^2 - \omega x + \omega - 2x + \omega \neq 0 \Rightarrow x^2 - \omega x + 1 \neq 0 \Rightarrow (x-\omega)(x-1) \neq 0$$

$$\Rightarrow x \neq r, \omega$$

$$x < 1 \Rightarrow x^2 - \omega + \omega x - 2x + \omega \neq 0 \Rightarrow x^2 + 3x \neq 0 \Rightarrow x(x+3) \neq 0$$

$$\Rightarrow x \neq 0, -3$$

$$D_f = \left\{ \mathbb{R} - \{1\} \mid \text{if } x \geq 1 \Rightarrow K = r, \omega \text{ or if } x < 1 \Rightarrow K = 0, -3 \right\}$$

$$a) y = \sqrt{[-x] - 2} \Rightarrow [-x] - 2 \geq 0 \Rightarrow [-x] \geq 2$$

سوال ٤

$$\Rightarrow [x] \leq -2 \Rightarrow x < -1 \Rightarrow D_f = (-\infty, -1)$$

$$b) y = \frac{\omega x^2 + 4}{[x]^2 - 2[x] - 3} \Rightarrow [x]^2 - 2[x] - 3 \neq 0 \xrightarrow{[x]=t} t^2 - 2t - 3 \neq 0$$

$$\Rightarrow (t-3)(t+1) \neq 0 \Rightarrow t \neq -1, 3$$

$$\Rightarrow [x] \neq -1, 3 \Rightarrow x \neq [-1, 0) \cup [3, 4)$$

$$\Rightarrow D_f = \mathbb{R} - [-1, 0) \cup [3, 4)$$

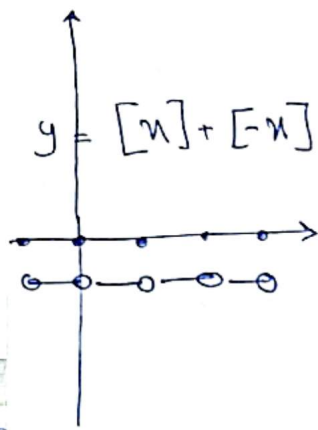
$$c) y = \sqrt{\left[x - \frac{1}{3}\right] + \left[x + \frac{2}{3}\right]} \Rightarrow \left[x - \frac{1}{3}\right] + \left[x + \frac{2}{3}\right] \geq 0$$

سوال ٥

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

$$\Rightarrow \left[x - \frac{1}{3}\right] \geq 0 \Rightarrow x \geq \frac{1}{3} \Rightarrow D_f = \left[\frac{1}{3}, \infty\right)$$

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

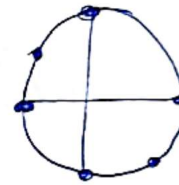


$$\left. \begin{array}{l} x \in \mathbb{Z} \quad y = 0 \\ x \in \mathbb{Z} \quad y = -1 \end{array} \right\} \Rightarrow x - \frac{1}{x} \in \mathbb{Z} \Rightarrow x \in \mathbb{Z} + \frac{1}{x}$$

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

$$y = \frac{\cot x + 1}{\tan x + 1} = \frac{\frac{\cos x}{\sin x} + 1}{\frac{\sin x}{\cos x} + 1}$$

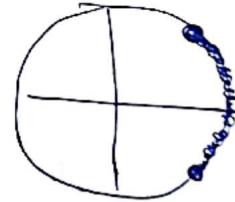
$$\Rightarrow \sin x \neq 0 \\ \cos x \neq 0 \\ \tan x \neq -1$$



سوال 4

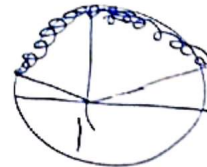
$$D_f = \mathbb{R} - \left\{ \frac{k\pi}{x}, k\pi - \frac{\pi}{x} \right\}$$

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



$$D_f = \left[2k\pi - \frac{\pi}{x}, 2k\pi + \frac{\pi}{x} \right]$$

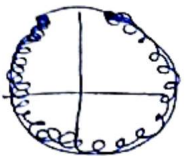
$$\text{ج) } y = \sqrt{x \sin x - 1} \Rightarrow x \sin x - 1 \geq 0 \Rightarrow \sin x \geq \frac{1}{x}$$



سوال 7

$$\Rightarrow D_f = \left[2k\pi + \frac{\pi}{x}, 2k\pi + \frac{\pi}{x} \right]$$

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



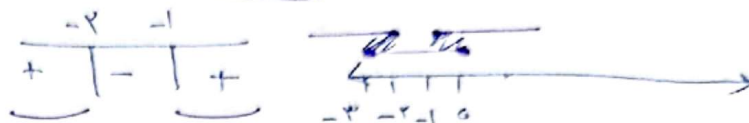
$$\Rightarrow D_f = \mathbb{R} - \left(2k\pi + \frac{\pi}{x}, 2k\pi + \frac{\pi}{x} \right)$$

$$y = \arcsin(x^2 + 3x + 1) \Rightarrow -1 \leq x^2 + 3x + 1 \leq 1$$

$$\Rightarrow -2 \leq x^2 + 3x \leq 0 \Rightarrow x^2 + 3x \leq 0$$

$$\Leftrightarrow x^2 + 3x \geq 0 \Rightarrow (x+1)(x+2) \geq 0$$

$$\Rightarrow D_f = [-3, -2] \cup [-1, 0]$$



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

$$\omega - 2x \geq 0$$

$$2x \leq \omega$$

$$\sqrt{\omega - 2x} \leq 0 \Rightarrow \omega - 2x = 0 \Rightarrow x = \frac{\omega}{2}$$

$$x \leq \frac{\omega}{2}$$

جواب
فی توانه کم از صفر نیست

$$\sqrt{\omega - 2x} \geq -1 \xrightarrow{\text{جوابی در توانه منفی نیست}} \sqrt{\omega - 2x} \geq 0$$

$$\Rightarrow D_f = \left(-\infty, \frac{\omega}{2}\right]$$

$$\omega - 2x \geq 0 \Rightarrow 2x \leq \omega$$

$$x \leq \frac{\omega}{2}$$

$$الف) y = \log_2(1 - \log_3 x) \Rightarrow x > 0$$

$$1 - \log_3 x > 0 \Rightarrow \log_3 x < 1$$

$$\Rightarrow x < 3$$

$$\Rightarrow D_f = (0, 3)$$

$$ب) y = \log_2\left(1 - \log_{\frac{1}{3}} x\right)$$

$$\Rightarrow x > 0$$

$$1 - \log_{\frac{1}{3}} x > 0 \Rightarrow \log_{\frac{1}{3}} x < 1$$

$$\Rightarrow x < \sqrt{\frac{1}{3}} \Rightarrow x < 1$$

$$\Rightarrow D_f = (0, 1)$$

$$الف) y = \sqrt{r^2 \varepsilon n - n^2} - 1 \Rightarrow r^2 \varepsilon n - n^2 - 1 \geq 0$$

$$\Rightarrow r^2 \varepsilon n - n^2 \geq 1 \Rightarrow r^2 \varepsilon n - n^2 \geq r^2 \Rightarrow f n - n^2 \geq r \Rightarrow$$

$$n^2 - \varepsilon n + r \leq 0 \Rightarrow \frac{1}{+} \quad \frac{r}{-} \quad \frac{1}{+} \Rightarrow \boxed{D_f = [1, r]}$$

$$ب) y = \left(\frac{r n + \omega}{r n + \varepsilon} \right)! \Rightarrow \frac{r n + \omega}{r n + \varepsilon} \in W \Rightarrow -\frac{f W - \omega}{r W - r} \in n$$

$$\Rightarrow \boxed{D_f = \left\{ n \mid n = \frac{\omega - f k}{r k - r}, k \in W \right\}}$$