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SUBJECT

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سوال اول

$$a) \sqrt{\frac{x^2 - 4x}{x^2 - x}} \quad \frac{x(x-4)}{x(x-1)} \quad x > 0$$

$$\frac{x(x-4)}{(x+1)(x-1)}$$

$$x \quad \begin{array}{c|c|c|c|c} -1 & 0 & 4 & & \\ \hline + & + & - & + & \end{array} \rightarrow Df = (0, 1) \cup (4, +\infty)$$

$$b) \sqrt{\frac{x^2 - x^2}{x^2 - x}} \rightarrow \frac{x^2(x^2 - 1)}{(x+1)(x-1)} \quad x > 0$$

$$\frac{x(x^2 - 1)}{(x+1)(x-1)}$$

$$x \quad \begin{array}{c|c|c|c|c} -1 & 0 & 1 & & \\ \hline + & + & - & + & \end{array} \rightarrow Df = \mathbb{R} - \{-1, 0, 1\}$$

سوال دوم

$$a) \frac{x+1}{\sqrt{x+|x|}} \Rightarrow x+|x| > 0$$

$$Df = (0, +\infty)$$

$$b) y = \frac{1}{\sqrt{x|x|}} \Rightarrow x|x| > 0$$

$$Df = (0, +\infty)$$

سوال سوم

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

$$[x] \leq x$$

$$(-\infty, +\infty)$$

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$$b) f = \frac{1}{\sqrt{z-[n]}}$$

(2) ✓

$$z-[n] > 0$$

$$\Rightarrow Df = (-\infty, z)$$

$$[n] < z$$

← سؤال صغير

$$c) f = \sqrt{[n-\frac{1}{p}] + [n+\frac{r}{p}]}$$

$$[n-\frac{1}{p}] + [n+\frac{r}{p}] \geq 0 \quad \rightarrow Df = [\frac{1}{p}, +\infty)$$

$$[n-\frac{1}{p}] + [n-\frac{1}{p}+1] > 0 \Rightarrow r[n-\frac{1}{p}] > 1-1$$

$$\downarrow [n-\frac{1}{p}] + 1 \quad [n-\frac{1}{p}] > \frac{1}{p}$$

$$n-\frac{1}{p} > 0 \rightarrow n > \frac{1}{p}$$

$$b) \sqrt{[n-\frac{1}{p}] + [-n+\frac{1}{p}]} \rightarrow [n-\frac{1}{p}] + [-n+\frac{1}{p}] > 0$$

$$\{-n+\frac{1}{p}\}$$

$$n \in \mathbb{Z} \rightarrow 0 \checkmark$$

$$\Rightarrow n-\frac{1}{p} \in \mathbb{Z}$$

$$n \notin \mathbb{Z} \rightarrow -1$$

$$Df = \{n \mid n \leq k + \frac{1}{p}, k \in \mathbb{Z}\}$$

← سؤال صغير

$$d) \frac{r}{\sin \alpha - 1} \rightarrow \sin \alpha - 1 \neq 0$$

$$\sin \alpha \neq 1$$

$$\alpha \neq 90^\circ \Rightarrow \frac{\pi}{2}$$

$$Df = i\mathbb{R} - \{k\pi + \frac{\pi}{2}\}$$



Benobar

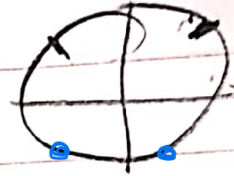
$$\Rightarrow y = \frac{r}{r \sin^n n - 1} \rightarrow r \sin^n n - 1 \neq 0$$

$$r \sin^n n \neq 1$$

$$\sin^n n \neq \frac{1}{r}$$

$$\sin n \neq \frac{1}{\sqrt[r]{r}} \times \frac{\sqrt[r]{r}}{\sqrt[r]{r}} \quad \text{(+)} \quad \frac{\sqrt[r]{r}}{r}$$

1, 0



$$DF = \left\{ r k \pi + \frac{\pi}{\epsilon}, r k \pi + \frac{\pi}{\epsilon} \right\} \leftarrow \text{پہلو}$$

$$\text{cu1) } y = \sqrt{r \sin n - 1} \rightarrow r \sin n - 1 \geq 0$$

$$r \sin n \geq 1$$

$$\sin n \geq \frac{1}{r}$$

$$\Rightarrow DF = \left[r k \pi + \frac{\pi}{\epsilon}, r k \pi + \frac{2\pi}{\epsilon} \right]$$



(+)

✓

$$\Rightarrow \sqrt{\cos n - 1} \rightarrow \cos n - 1 \geq 0$$

$$\cos n \geq 1$$

$$DF = \{ r k \pi \}$$

← پہلو

$$\text{cu1) } \cos y = |n| - r$$

$$-1 \leq |n| - r \leq 1$$

$$r \leq |n| + 1, r \in \mathbb{R} \rightarrow r \leq n \leq r \rightarrow DF = [-r, r]$$

(+)

✓

$$\rightarrow DF = [-r, -r] \cup [-1, 0]$$

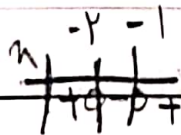
$$\Rightarrow \arcsin (n^r + r n + 1)$$

$$\leftarrow -1 \leq n^r + r n + 1 \leq 1$$

$$n^r + r n + 1 \leq 1$$

$$n^r + r n + 1 \geq 0$$

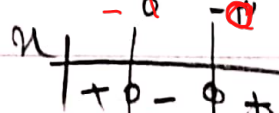
$$(n+1)(n+r)$$



$$n^r + r n + 1 \leq 1$$

$$n^r + r n \leq 0$$

$$n(n^r + r) \leq 0$$



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$$a = b^c$$

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← سوال سوم

$$y = \sqrt{x - \log_{10}(x-2)} \rightarrow x - \log_{10}(x-2) \geq 0$$

$$\log_{10}(x-2) \leq x$$

$$\Rightarrow Df = [1, +\infty)$$

$$x-2 \leq 9$$

$$x \leq 11$$

$$(-\infty, 11]$$

$$[2, 11]$$

ب)

$$y = \log(x^2 - x)$$

$$x^2 - x > 0$$

$$x(x-1) > 0$$

$$x(x+1)(x-1) > 0$$

$$\begin{array}{c|ccc} & -1 & 0 & 1 \\ \hline x & - & + & - & + \end{array}$$

$$\rightarrow Df = (-1, 0) \cup (1, +\infty)$$

← سوال چهارم

$$a) y = \frac{x}{e^x + 1} \rightarrow e^x + 1 \neq 0$$

$$e^x \neq -1 \rightarrow Df = \mathbb{R}$$

$$b) y = \frac{x}{e^x - 1} \rightarrow e^x - 1 \neq 0$$

$$e^x \neq 1 \Rightarrow Df = \mathbb{R} - \{0\}$$

$$x \neq 0$$

$$2) y = \frac{x}{e^x - 2} \rightarrow e^x - 2 \neq 0$$

$$e^x \neq 2 \Rightarrow \left\{ \log_2 x \right\}$$

$$3) y = \frac{x}{e^x - \mu} \rightarrow e^x - \mu \neq 0$$

$$\Rightarrow Df = \left\{ \log_{\mu} x \right\}$$



Senobar

← 1000

ا) $y = (n+1)!$

$$\frac{(n+1)w}{n \cdot w - 1} \Rightarrow \left\{ n \mid n = \frac{k-1}{e}, k \in w \right\}$$

ب) $y = \left(\frac{r_n - r}{r_n - a} \right)!$

$$\frac{r_n - r}{r_n - a} \in w$$

(e) ✓

$$r_n - r \in r_n w - a w$$

$$r_n - r_n w \in -a w + r$$

$$r(r - r w) \in -a w + r$$

$$r \in \frac{-a w + r}{r - r w}$$

$$\Rightarrow Df = \left\{ n \mid n = \frac{-a k + r}{r - r k}, k \in w \right\}$$