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سؤال اول

SUBJECT

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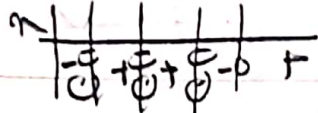
سؤال اول

$$a) \sqrt{\frac{x^2 - 4x}{x^2 - x}}$$

$$\frac{x(x-4)}{x(x-1)} \geq 0$$

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

-1 0 1 4



$$\rightarrow Df = (0, 1) \cup [4, +\infty)$$

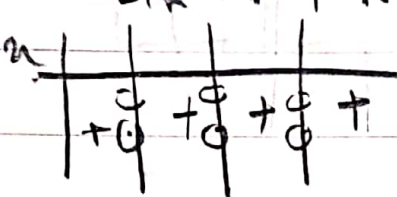
$$b) \sqrt{\frac{x^2 - x^4}{x^2 - x}}$$

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

> 0

-1 0 1

-1 0 1



$$\rightarrow Df = \mathbb{R} - \{-1, 0, 1\}$$

سؤال دوم

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

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

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

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

سؤال سوم

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

$$[x] \leq x$$

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

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

$$r-[n] > 0 \Rightarrow Df = (-\infty, r)$$

$$[n] < r$$

← سؤال صغير

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

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

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

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

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

$$\left\{ -\left(n - \frac{1}{p}\right) \right\}$$

$$n \in \mathbb{Z} \rightarrow 0 \checkmark \Rightarrow n - \frac{1}{p} \in \mathbb{Z}$$

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

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

← سؤال صغير

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

$$\sin n \neq 1$$

$$n \neq 2k\pi \Rightarrow \frac{r}{p}$$

$$Df = \mathbb{R} - \left\{ k\pi + \frac{\pi}{p} \right\}$$

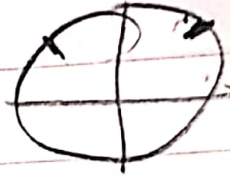
Senobar

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

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

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

$$\sin n \neq \frac{1}{\sqrt[r]{r}} \times \frac{\sqrt[r]{r}}{\sqrt[r]{r}} = \frac{\sqrt[r]{r}}{r}$$



$$Df = \left\{ r k \pi + \frac{\pi}{\varepsilon}, r k \pi + \frac{r \pi}{\varepsilon} \right\} \leftarrow \text{پہلو دے کر}$$

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



$$r \sin n \geq 1$$

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

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

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

$$\cos n \geq 1$$

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

← پہلو دے کر

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

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

$$r \leq |n|, r \in \mathbb{R} \rightarrow r \leq n \leq r \rightarrow Df = (-r, r)$$

$$-r \leq n \leq r$$

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

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

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

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

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

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

$$n \leq 0$$

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

$$n^r + r n \geq -2$$

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

$$n^2 - 1$$

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$$a = b^c$$

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← سوال سوم

$$y = \sqrt{x - \log_{\frac{1}{x}}(x-2)} \rightarrow x - \log_{\frac{1}{x}}(x-2) \geq 0$$

$$\log_{\frac{1}{x}}(x-2) \leq x$$

$$\Rightarrow Df = \left[\frac{1}{2}, 2 \right)$$

$$x-2 \leq 1$$

$$x \leq 3$$

$$(-\infty, 11]$$

ب)

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

$$x^2 - x > 0$$

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

$$x(x-1)$$

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

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

← سوال چهارم

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

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

ب)

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

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

$$x \neq 0$$

2.)

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

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

$$Df \rightarrow$$

3.)

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

$$e^x \neq \mu$$

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



Senobar

← 1000

$$a) y = (n+1)!$$

$$\frac{(n+1)w}{n \in w-1} \Rightarrow \{n | n = \frac{k-1}{e}, k \in w\}$$

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

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

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

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

$$r(1 - w) \in -a w + r$$

$$r \in \frac{-a w + r}{1 - w}$$

$$\Rightarrow Df = \{n | n = \frac{-a k + r}{1 - r k}, k \in w\}$$