

سوال ۱

$$y = \sqrt{\frac{x^2 - 6x}{x^3 - x}} \Rightarrow x(x^2 - 1) \neq 0 \Rightarrow \begin{cases} x \neq 0 \\ x \neq -1 \\ x \neq 1 \end{cases}$$

$$\frac{x^2 - 6x}{x^3 - x} > 0 \Rightarrow \frac{x(x-6)}{x(x-1)} > 0$$

نقش علامت ہم می کنند

$$\Rightarrow \text{DF} = [-1, 0) \cup (0, 1) \cup [6, +\infty)$$

ب

$$y = \sqrt{\frac{x^5 - x^3}{x^3 - x}} = \sqrt{\frac{x^3(x^2 - 1)}{x(x^2 - 1)}} \Rightarrow x(x^2 - 1) \neq 0 \Rightarrow \begin{cases} x \neq 0 \\ x \neq 1 \\ x \neq -1 \end{cases}$$

نقش علامت ہم می کنند

$$\Rightarrow \text{DF} = \mathbb{R} - \{0, 1, -1\}$$

آلف

سوال ۲

دامنه می توابع

$$y = \frac{x+1}{\sqrt{x+|x|}} \Rightarrow x+|x| > 0 \Rightarrow x \geq -x \Rightarrow x \geq 0$$

$$\Rightarrow \text{DF} = (0, +\infty)$$

ب

$$y = \frac{1}{\sqrt{2-x}} \Rightarrow 2-x > 0 \Rightarrow 2 > x \Rightarrow x < 2$$

$$\Rightarrow \text{DF} = (-\infty, 2)$$



سوال ۳ - الف

$$y = \sqrt{2 - [x]} \Rightarrow 2 - [x] \geq 0 \Rightarrow 2 \geq [x] \Rightarrow \text{Def: } (-\infty, 3)$$

ب

$$y = \frac{1}{\sqrt{2|x|}} \Rightarrow \sqrt{2|x|} > 0 \Rightarrow |x| > 0 \Rightarrow x \neq 0$$

$$\Rightarrow \text{Def: } (-\infty, 0) \cup (0, +\infty)$$

سوال ۴ الف

$$y = \sqrt{\left[x - \frac{1}{3}\right] + \left[x + \frac{2}{3}\right]} = \sqrt{\left[x - 1 + \frac{2}{3}\right] + \left[x + \frac{2}{3}\right]} = \sqrt{2\left[x + \frac{2}{3}\right]}$$

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

$$\Rightarrow x \geq \frac{1}{3} \Rightarrow \text{Def: } \left[\frac{1}{3}, +\infty\right)$$

ب

$$y = \sqrt{\underbrace{\left[x - \frac{1}{3}\right]}_a + \underbrace{\left[x + \frac{2}{3}\right]}_{-a}} \xrightarrow{\text{if}} \begin{cases} a \in \mathbb{Z} & [a] + [-a] = 0 \\ a \notin \mathbb{Z} & [a] + [-a] = -1 \end{cases}$$

$$\Rightarrow x - \frac{1}{3} \in \mathbb{Z} \Rightarrow \text{Def: } \left\{x \mid x = k + \frac{1}{3}, k \in \mathbb{Z}\right\}$$

سوال ۵ الف

$$y = \frac{2}{\sin x - 1} \Rightarrow \sin x - 1 \neq 0 \Rightarrow \sin x \neq 1$$

$$\Rightarrow x \neq 2k\pi + \frac{\pi}{2}$$

$$\Rightarrow \text{Def: } \mathbb{R} \setminus \left\{\frac{\pi}{2} + 2k\pi \mid k \in \mathbb{Z}\right\}$$



عطارد دهم کلاس میارشد ها

آید علی چاهی

Subject:
Year: Month: Date:

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

$$\Rightarrow 2 \sin^2 x \neq \frac{1}{2} \Rightarrow \sin x \neq \pm \frac{\sqrt{2}}{2}$$

$$Df = \left\{ \frac{k\pi}{2} + \frac{\pi}{4} \mid k \in \mathbb{Z} \right\}$$

الف

سوال دامنه و ترابع

$$y = \sqrt{2 \sin x - 1} \Rightarrow 2 \sin x - 1 \geq 0 \Rightarrow 2 \sin x \geq 1 \Rightarrow \sin x \geq \frac{1}{2}$$

$$\Rightarrow Df = \left[\frac{\pi}{6} + 2k\pi, \frac{5\pi}{6} + 2k\pi \right]$$

$$y = \sqrt{\cos x - 1} \Rightarrow \cos x - 1 \geq 0 \Rightarrow \cos x \geq 1$$

ولی همیشه $\cos x \leq 1$ است بنابراین $\cos x = 1$ فقط مساوی با 1 است

$$Df = \{2k\pi \mid k \in \mathbb{Z}\}$$

سوال ما دامنه و ترابع روابط زیر را بدست آورید

$$\cos y = |x| - 3$$

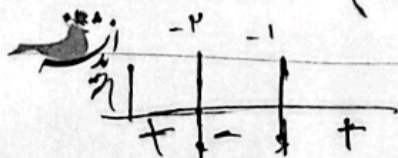
$$\Rightarrow |x| - 3 \in [-1, 1] \Rightarrow |x| \in [2, 4] \Rightarrow \begin{cases} x \in [2, 4] \\ x \in [-4, -2] \end{cases}$$

$$\Rightarrow Df = [-4, -2] \cup [2, 4]$$

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

$$\Rightarrow -2 \leq x^2 + 3x \Rightarrow -2 \leq x^2 + 3x + 1$$

$$\Rightarrow (x+1)(x+2) \geq 0 \Rightarrow \begin{cases} x \geq -1 \\ x \leq -2 \end{cases}$$



داده های سوال

$$x^2 + 3x + 1 \leq 1$$

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

$$x(x+3) \leq 0 \Rightarrow \boxed{-3 \leq x \leq 0}$$

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

اشتراک دو جواب

$$Df = [-3, 0] \cup [-1, 0]$$

سوال ۲

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

همچون وقتی x^2 منفی نمی شود

$$Df: \mathbb{R}$$

$$ب) y = \frac{x^2}{x^2-1} \Rightarrow x^2 - 1 \neq 0 \Rightarrow x^2 \neq 1 \Rightarrow x \neq \pm 1$$

$$Df: \mathbb{R} - \{ \pm 1 \}$$

$$ج) y = \frac{x^3}{x^2-2} \Rightarrow x^2 - 2 \neq 0 \Rightarrow x^2 \neq 2 \Rightarrow x \neq \pm \sqrt{2}$$

$$\Rightarrow 2x \neq 1 \Rightarrow x \neq \frac{1}{2}$$

$$Df: \mathbb{R} - \left\{ \pm \sqrt{2}, \frac{1}{2} \right\}$$

$$د) y = \frac{x^3}{x^2-3} \Rightarrow x^2 - 3 \neq 0 \Rightarrow x \neq \pm \sqrt{3}$$



$$Df: \mathbb{R} - \{ \pm \sqrt{3} \}$$

الف) $(n+1)!$

سوال 1

$$n+1 \in w \rightarrow n \in w-1 \Rightarrow n \in \frac{w-1}{r}$$

$$Df = \left\{ \frac{K-1}{r} \mid K \in w \right\}$$

ب) $\left(\frac{3n-2}{2n-8} \right)!$ $\Rightarrow \frac{3n-2}{2n-8} \in w \Rightarrow 3n-2 = 2nw-8w$

$$\Rightarrow 3n - w(2n) = 2-8w$$

$$\Rightarrow n(3-2w) = 2-8w$$

$$\Rightarrow n = \frac{2-8w}{3-2w} \Rightarrow 2-8w \neq 0 \Rightarrow 3 \neq 2w$$

$$\Rightarrow w \neq \frac{3}{2}$$

$$Df = R - \left\{ \frac{3}{2} \right\}$$

سوال A

الف) $y = \sqrt{2 \log_3(n-2)}$

$$Df = (2, 11]$$

$$\begin{cases} n-2 > 0 \Rightarrow n > 2 \\ 2 \log_3(n-2) \geq 0 \Rightarrow \log_3(n-2) \geq 0 \Rightarrow n-2 \geq 1 \Rightarrow n \geq 3 \end{cases}$$

ب) $y = \log(n^3 - n) \Rightarrow n^3 - n \geq 1 \Rightarrow n(n^2 - 1) \geq 1$

$$\Rightarrow n \neq -1, 0, 1$$

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

