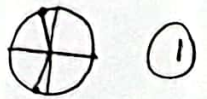


1815

نام: سید آلاء کاشانی کلاس: دهم دفتر/ان: دبیرانی تکلیف: د

الف) $y = \frac{\sin x - 2}{2 \cos x + 1}$

$2 \cos x \neq -1 \rightarrow \cos x \neq -\frac{1}{2} \rightarrow D = R - \left\{ 2k\pi \pm \frac{2\pi}{3} \right\}$



(1)

✓

ب) $y = \frac{\sin x + 2}{\cos x - 1}$

$\cos x \neq +1 \rightarrow D = R - \{2k\pi\}$



الف) $y = \frac{2 \sin x + 1}{\tan x + 1}$

$\begin{cases} \tan x + 1 \neq 0 \rightarrow \tan x \neq -1 \\ \cos x \neq 0 \end{cases}$

$\rightarrow D = R - \left\{ k\pi + \frac{\pi}{4}, k\pi + \frac{3\pi}{4} \right\}$



(2)

✓

ب) $y = \frac{\cos x + 1}{\cot x - 1}$

$\begin{cases} \cot x - 1 \neq 0 \rightarrow \cot x \neq +1 \\ \sin x \neq 0 \end{cases}$

$\rightarrow D = R - \left\{ k\pi, k\pi + \frac{\pi}{2} \right\}$



الف) $\sin y = x^2 - 2$

$-1 \leq x^2 - 2 \leq +1 \rightarrow 1 \leq x^2 \leq 3 \rightarrow 1 \leq x \leq \sqrt{3} \rightarrow D = [1, \sqrt{3}]$
 $- \sqrt{3} \leq x \leq -1$
 $[-\sqrt{3}, -1]$

(3)

ب) $y = \arccos(\sqrt{x} - 2)$

$\begin{cases} \sqrt{x} \rightarrow x \geq 0 \\ -1 \leq \sqrt{x} - 2 \leq +1 \rightarrow 1 \leq \sqrt{x} \leq 3 \rightarrow 1 \leq x \leq 9 \end{cases} \rightarrow D = [1, 9]$

الف) $\cos y = |x| - 2$

$-1 \leq |x| - 2 \leq +1 \rightarrow 1 \leq |x| \leq 3 \rightarrow D = [-3, -1] \cup [1, 3]$

(4)

ب) $y = \arcsin(x^2 + 2x + 1)$

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

$\frac{-2}{+} \frac{-1}{-} \frac{+}{+} \quad \frac{-2}{+} \frac{+}{-} \frac{+}{+} \rightarrow D = [-2, -1] \cup [-1, 0]$

الف) $y = \log_{\frac{1}{2}}(x^2 - 2)$

$x^2 - 2 > 0 \rightarrow x^2 > 2 \rightarrow x > \sqrt{2} \rightarrow D = (\sqrt{2}, +\infty) \cup (-\infty, -\sqrt{2})$

(5)

ب) $y = \log_{\frac{1}{2}}|x|$

$1 - |x| > 0 \rightarrow 1 > |x| \rightarrow -1 < x < 1 \rightarrow D = (-1, 1)$

الف) $y = \log_{x-2}^{a-x}$ $\begin{cases} a-x > 0 \rightarrow a > x \\ x-2 > 0 \rightarrow x > 2 \\ x-2 \neq 1 \rightarrow x \neq 3 \end{cases} \rightarrow D = (2, a) - \{3\}$ (4)

ب) $y = \log_{x+2}^{x^2-1}$ $\begin{cases} x^2-1 > 0 \rightarrow x^2 > 1 \rightarrow x > 1 \\ x+2 > 0 \rightarrow x > -2 \\ x+2 \neq 1 \rightarrow x \neq -3 \end{cases} \rightarrow D = (-3, -1) \cup (1, +\infty) - \{-2\}$ (1,0) ✓

الف) $y = \log \frac{x^2-1}{x-2}$ $\begin{cases} \frac{(x-1)(x+1)}{x-2} > 0 \rightarrow \frac{1}{-} + \frac{+}{+} + \rightarrow D = (1, 2) \cup (2, +\infty) \end{cases}$ (✓)

ب) $y = \log \frac{x+2}{x-2}$ $\begin{cases} \frac{x+2}{x-2} > 0 \rightarrow \begin{cases} x+2 < 0 \rightarrow x < -2 \\ x-2 < 0 \rightarrow x < 2 \end{cases} \\ x+2 \neq 0 \rightarrow x \neq -2 \\ x-2 \neq 0 \rightarrow x \neq 2 \end{cases} \rightarrow D = (-\infty, -2) \cup (-2, 2) \cup (2, +\infty) - \{-2\}$ (✓)

الف) $y = \sqrt{x-2} \log(x-2)$ $\begin{cases} x-2 > 0 \rightarrow x > 2 \\ x-2 \log(x-2) \geq 0 \rightarrow \log(x-2) \leq 1 \rightarrow x-2 \leq 1 \rightarrow x \leq 3 \end{cases} \rightarrow D = (2, 3]$ (1) ✓

ب) $y = \log(x \log_{\frac{1}{x}} - 1)$ $\begin{cases} x > 0 \\ x \log_{\frac{1}{x}} - 1 > 0 \rightarrow \log_{\frac{1}{x}} > \frac{1}{x} \rightarrow x > \frac{1}{x} \rightarrow x > \sqrt{x} \end{cases} \rightarrow D = (\sqrt{x}, +\infty)$

الف) $y = \frac{x}{x^2+1}$ $\begin{cases} x^2+1 \neq 0 \rightarrow x^2 \neq -1 \rightarrow D = \mathbb{R} \end{cases}$ (✓)

ب) $y = \frac{x}{x^2-1}$ $\begin{cases} x^2-1 \neq 0 \rightarrow x^2 \neq 1 \rightarrow D = \mathbb{R} - \{-1, 1\} \end{cases}$

ب) $y = \frac{x}{x^2-1}$ $\begin{cases} x^2-1 \neq 0 \rightarrow x^2 \neq -1 \rightarrow D = \mathbb{R} - \{0\} \end{cases}$ (9)

ب) $y = \frac{x}{x^2-1}$ $\begin{cases} x^2-1 \neq 0 \rightarrow x^2 \neq 1 \rightarrow D = \mathbb{R} - \{\log_{\frac{1}{x}}\} \end{cases}$

الف) $y = (x+1)!$ $\begin{cases} x+1 \in \mathbb{N} \rightarrow x \in \frac{\mathbb{N}-1}{1} \rightarrow D = \{x/x = \frac{k-1}{1}, k \in \mathbb{N}\} \end{cases}$ (10)

ب) $y = \left(\frac{x^2-1}{x-2}\right)!$ $\begin{cases} \frac{x^2-1}{x-2} \in \mathbb{N} \rightarrow x^2-1 = k(x-2) \rightarrow x^2-kx+2k-1=0 \rightarrow x = \frac{k \pm \sqrt{k^2-4k+4}}{2} \end{cases}$

$x = \frac{dy-b}{cy-a} \rightarrow \frac{+k-dk}{1-k} \rightarrow D = \{x/x = \frac{+dk-1}{+1k-1}, k \in \mathbb{N}\}$