

نام و نام خانوادگی آرشیا شیرازی پاسخنامه تشریحی تکلیف شماره ... کلاس ... A ... 14:20:18

الف) $y = \sqrt{4 - \sqrt{2-x}} = 2-x \geq 0 \rightarrow x \leq 2$
 $4 - \sqrt{2-x} \geq 0 \rightarrow \sqrt{2-x} \leq 4$
 $2-x \leq 16 \rightarrow -14 \leq x$
 $Df = [-14, 2]$ (3)

ب) $y = \sqrt{3 - \sqrt{x-2}} = x-2 \geq 0 \rightarrow x \geq 2$
 $3 - \sqrt{x-2} \geq 0 \rightarrow 3 \geq \sqrt{x-2} \rightarrow 9 \geq x-2 \rightarrow 11 \geq x$
 $Df = [2, 11]$

الف) $y = \sqrt{4 - 2x^2} = 4 - 2x^2 \geq 0 \rightarrow 4 \geq 2x^2 \rightarrow 2 \geq x^2 \rightarrow -\sqrt{2} \leq x \leq \sqrt{2}$
 ~~$Df = (-\infty, 1]$~~
 0, 2, 5

ب) $y = \sqrt{2|x| - 1} = 2|x| - 1 \geq 0 \rightarrow 2 \leq |x| \rightarrow x \geq 2 \text{ or } x \leq -2$
 $Df = (-\infty, -2] \cup [2, +\infty)$
 1

الف) $y = \sqrt{\frac{|x|+1}{|x|-3}}$ $|x| \neq 3$ $x \neq \pm 3$ $Df = \mathbb{R} - \{\pm 3\}$ (3)

ب) $y = \sqrt{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$
 $\sqrt{x} \geq 0 \rightarrow x \geq 0$
 $\sqrt{x}-3 \neq 0 \rightarrow \sqrt{x} \neq 3 \rightarrow x \neq 9$
 $Df = \{x \geq 0, x \neq 9\}$

الف) $y = \frac{\sqrt{3-|x|}}{|x|+2}$
 $3-|x| \geq 0 \rightarrow |x| \leq 3 \rightarrow -3 \leq x \leq 3$
 $|x|+2 \neq 0 \rightarrow |x| \neq -2$
 $Df = [-3, 3]$ ✓

ب) $y = \frac{\sqrt{4-x^2}}{|x|-1}$
 $4-x^2 \geq 0 \rightarrow x^2 \leq 4 \rightarrow x \leq 2$ (1)
 $|x|-1 \neq 0 \rightarrow |x| \neq \pm 1 \rightarrow \mathbb{R} - \{\pm 1\}$ (2) ✓

① ∩ ② $\rightarrow Df = \{x \leq 2, x \neq \pm 1\}$! ~~$(-\infty, 2]$~~ , ~~$\{x \neq \pm 1\}$~~

الف) $y = \frac{x+1}{\sqrt{x+|x|}} = x+|x| > 0 \rightarrow |x| > -x$ $Df = \mathbb{R}^+$
 (1) ✓
 (2) ✗
 (3) ✗

ب) $y = \frac{1}{\sqrt{x|x|}} = x|x| > 0$
 (1) ✓
 (2) ✗
 (3) ✗

$Df = \mathbb{R}^+$ ✓

الف) $y = \sqrt{2 - [x]}$ $2 - [x] \geq 0$ $y \geq [x]$ $y > x$ $Df = (-\infty, 2)$

ب) $y = \frac{1}{\sqrt{2 - [x]}}$ $\sqrt{2 - [x]} > 0$ $2 - [x] > 0$ $y > [x]$ $y > x$ $Df = (-\infty, 2)$

الف) $y = \frac{1}{x[x]}$ $x[x] \neq 0$ $0 \leq x < 1$ $Df = \cancel{[0, 1)}$
 $\text{و } y \neq \infty$ $R - [0, 1)$

ب) $y = \frac{1}{\sqrt{-x[x]}}$ $-x[x] > 0$ $\begin{matrix} \oplus & \times \\ \ominus & \times \\ \odot & \times \end{matrix}$ $Df = \emptyset$

الف) $y = \sqrt{[x - \frac{1}{x}] + [x + \frac{1}{x}]} = [x - \frac{1}{x}] + [x + \frac{1}{x}] \geq 0 \rightarrow [x + \frac{1}{x} - 1] + [x + \frac{1}{x}] \geq 0$
 $\rightarrow [x + \frac{1}{x}] - 1 + [x + \frac{1}{x}] \geq 0 \rightarrow 2[x + \frac{1}{x}] \geq 1 \rightarrow [x + \frac{1}{x}] \geq \frac{1}{2} \rightarrow x + \frac{1}{x} \geq 1$
 $\rightarrow x \geq \frac{1}{x}$ $Df = \cancel{[\frac{1}{x}, +\infty)}$

ب) $\sqrt{[x - \frac{1}{x}] + [-x + \frac{1}{x}]} = \begin{cases} [x] + [-x] = 0 \rightarrow x \in \mathbb{Z} \\ [x] + [-x] = -1 \rightarrow x \notin \mathbb{Z} \end{cases} \rightarrow x - \frac{1}{x} \in \mathbb{Z}$
 $Df = \{x / x = n + \frac{1}{x}, n \in \mathbb{Z}\}$

الف) $y = \frac{1}{y \sin^2 x - 1} = y \sin^2 x - 1 \rightarrow y \sin^2 x \neq 1 \rightarrow \sin^2 x \neq \frac{1}{y}$
 $\sin x \neq \sqrt{\frac{1}{y}}$ $\sin x \neq \frac{\sqrt{y}}{y}$ $Df = \mathbb{R} - \{yK\pi + \frac{\pi}{2}\}, \{yK\pi + \frac{3\pi}{2}\}$

ب) $y = \frac{\cot x + 1}{\tan x + 1} \rightarrow Df = \mathbb{R} - \{yK\pi, yK\pi + \frac{\pi}{4}, yK\pi + \frac{5\pi}{4}, yK\pi + \pi, yK\pi + \frac{7\pi}{4}, yK\pi + \frac{3\pi}{2}\}$

الف) $y = \sqrt{y \sin x - 1} = y \sin x - 1 \geq 0$ $\sin x \geq \frac{1}{y}$ $Df = [yK\pi + \frac{\pi}{2}] \cup [yK\pi + \frac{3\pi}{2}]$

ب) $y = \sqrt{1 - y \cos x} = y \cos x \leq 1$ $\cos x \leq \frac{1}{y}$ $Df = (yK\pi - \frac{\pi}{y}) \cup [yK\pi - \frac{\pi}{y}] \cup R - [yK\pi + \frac{\pi}{y}, yK\pi + \frac{\pi}{y})$