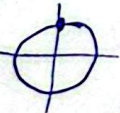


نام و نام خانوادگی:! بیست و نه سالگی پاسخنامه تشریحی تکلیف شماره ۴ ... کلاس ...

الف) $y = \sqrt{\frac{x^2 - 2x}{x^3 - x}}$ $\rightarrow \frac{x(x-2)}{x(x-1)(x+1)} \geq 0 / x(x-1)(x+1) \neq 0$ $\rightarrow \frac{-1}{-1} + \frac{2}{-1} + \frac{1}{-1} - \frac{1}{-1} \rightarrow D_f = (-1, 0) \cup (0, 1) \cup [1, +\infty)$	ب) $y = \sqrt{\frac{x^3 - x^2}{x^3 - x}}$ $\rightarrow \frac{x^2(x-1)(x+1)}{x(x-1)(x+1)} \geq 0 / x(x-1)(x+1) \neq 0$ $\rightarrow \frac{1}{+1} + \frac{2}{+1} + \frac{1}{+1} \rightarrow D_f = \mathbb{R} - \{-1, 0, 1\}$	۱
الف) $y = \frac{x+1}{\sqrt{x+ x }}$ $\rightarrow x+ x > 0 \rightarrow x > 0$ $\rightarrow D_f = (0, +\infty)$	ب) $y = \frac{1}{\sqrt{ x +x}}$ $\rightarrow x +x > 0 \rightarrow x > 0$ $\rightarrow D_f = (0, +\infty)$	۲
الف) $y = \sqrt{2 - [x]}$ $\rightarrow 2 - [x] \geq 0 \rightarrow [x] \leq 2 \rightarrow x < 3$ $\rightarrow D_f = (-\infty, 3)$	ب) $y = \frac{1}{\sqrt{2 - [x]}}$ $\rightarrow 2 - [x] > 0 \rightarrow [x] < 2 \rightarrow x < 3$ $\rightarrow D_f = (-\infty, 3)$	۳
الف) $y = \sqrt{\left[x - \frac{1}{x}\right] + \left[x + \frac{1}{x}\right]}$ $\rightarrow 2\left[x + \frac{1}{x}\right] - 1 \geq 0 \rightarrow \left[x + \frac{1}{x}\right] \geq \frac{1}{2}$ $\rightarrow x + \frac{1}{x} \geq 1$ $\rightarrow x \geq \frac{1}{x} \rightarrow D_f = \left[\frac{1}{x}, +\infty\right)$	ب) $y = \sqrt{\left[x - \frac{1}{x}\right] + \left[-x + \frac{1}{x}\right]}$ $\rightarrow \left[x - \frac{1}{x}\right] + \left[-x + \frac{1}{x}\right] = 0$ $\rightarrow x - \frac{1}{x} \in \mathbb{Z} \rightarrow D_f = \left\{x \mid x = k + \frac{1}{x}, k \in \mathbb{Z}\right\}$	۴
الف) $y = \frac{r}{\sin x - 1}$ $\rightarrow \sin x \neq 1 \rightarrow$  $\rightarrow D_f = \mathbb{R} - \left\{2k\pi + \frac{\pi}{2}\right\}$	ب) $y = \frac{r}{r \sin^2 x - 1}$ $\rightarrow r \sin^2 x \neq 1 \rightarrow \sin x \neq \pm \frac{1}{r} \rightarrow$  $\rightarrow D_f = \mathbb{R} - \left\{\frac{k\pi}{r} + \frac{\pi}{r}\right\}$	۵

الف) $y = \sqrt{r \sin x - 1}$ $\rightarrow r \sin x - 1 \geq 0 \rightarrow \sin x \geq \frac{1}{r}$  $\hookrightarrow D_f = [2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4}]$ (2) ✓	ب) $y = \sqrt{\cos x - 1}$ $\rightarrow \cos x - 1 \geq 0 \rightarrow \cos x \geq 1$  $\hookrightarrow D_f = \{2k\pi\}$	٦
الف) $\cos y = x - 3$ $\rightarrow -1 \leq x - 3 \leq 1 \rightarrow 2 \leq x \leq 4$ $\rightarrow \begin{cases} -4 \leq x \leq -2 \\ 2 \leq x \leq 4 \end{cases}$ $\hookrightarrow D_f = [-4, -2] \cup [2, 4]$ (2) ✓	ب) $y = \arcsin(x^2 + 3x + 1)$ $\rightarrow -1 \leq x^2 + 3x + 1 \leq 1$ $\rightarrow \begin{cases} (x+1)(x+2) \geq 0 \\ x(x+3) \leq 0 \end{cases}$ $\rightarrow \begin{matrix} -2 & -1 \\ + & - & - & + \\ - & + & + & - \\ + & - & - & + \end{matrix}$ $\hookrightarrow D_f = [-2, -1] \cup [-1, 0]$	٧
الف) $y = \sqrt{r - \log_r(x-r)}$ $\rightarrow x - r > 0 \rightarrow x > r$ $\rightarrow r / r - \log_r(x-r) \geq 0$ $\rightarrow \log_r(x-r) \leq r \rightarrow x \leq 11$ $\hookrightarrow D_f = (r, 11]$ (2) ✓	ب) $y = \log(x^2 - x)$ $\rightarrow x(x-1) > 0$ $\rightarrow \begin{matrix} x & x-1 \\ + & - \\ - & + \end{matrix}$ $\rightarrow \frac{-1}{-1} < x < \frac{1}{1}$ $\hookrightarrow D_f = (-1, 0) \cup (1, +\infty)$	٨
الف) $y = \frac{r}{x^2 + 1} \rightarrow x^2 \neq -1 \rightarrow x \neq \log_r(-1)$ $\hookrightarrow D_f = \mathbb{R}$ (2) ✓	ب) $y = \frac{r}{x^2 - 1} \rightarrow x^2 \neq 1 \rightarrow x \neq 0$ $\hookrightarrow D_f = \mathbb{R} - \{0\}$	٩
ج) $y = \frac{r}{x^2 - r} \rightarrow x^2 \neq r \rightarrow x \neq \log_r r$ $\hookrightarrow D_f = \mathbb{R} - \{\log_r r\}$	د) $y = \frac{r}{x^2 - r} \rightarrow x^2 \neq r \rightarrow \log_r r \neq x$ $\hookrightarrow D_f = \mathbb{R} - \{\log_r r\}$	
الف) $y = (x+1)!$ $\rightarrow x+1 \in \mathbb{W} \rightarrow x = \frac{11-1}{1}$ $\hookrightarrow D_f = \{x \mid x = \frac{k-1}{r}, k \in \mathbb{W}\}$ (1, 2) ✓	ب) $y = (\frac{rx-1}{rx-2})!$ $\rightarrow \frac{rx-1}{rx-2} \in \mathbb{W}$ $\hookrightarrow D_f = \{x \mid x = \frac{rk+r}{rk-r}, k \in \mathbb{W}\}$ $\frac{ax+b}{cx+d} = y \rightarrow x = \frac{dy-b}{cy-a}$	١٠