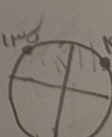


نام و نام خانوادگی: ... مسیحی ... پاسخنامه تشریحی تکلیف شماره ... کلاس ...

الف) $y = \sqrt{\frac{x^2 - 4x}{x^2 - x}}$ $D_f = (-1, 1) \cup [4, +\infty) - \{0\}$ $\frac{x^2 - 4x}{x^2 - x} \geq 0$ $\frac{x(x-4)}{x(x-1)(x+1)} \geq 0$ $\frac{+}{-} \frac{+}{0} \frac{+}{+} \frac{+}{-} \frac{+}{+}$	ب) $y = \sqrt{\frac{x^3 - x^2}{x^2 - x}}$ $D_f = \mathbb{R} - \{-1, 0, 1\}$ $\frac{x^3 - x^2}{x^2 - x} \geq 0$ $\frac{x^2(x-1)}{x(x-1)(x+1)} \geq 0$ $\frac{+}{-} \frac{+}{0} \frac{+}{+} \frac{+}{-} \frac{+}{+}$	1
الف) $y = \frac{x+1}{\sqrt{x+ x }}$ $x+ x > 0$ $\ominus \rightarrow x$ $\odot \rightarrow x$ $+ \rightarrow \checkmark$ $D_f = (0, +\infty) \cup (-1, 0)$	ب) $y = \frac{1}{\sqrt{x x }}$ $x x > 0$ $\ominus \rightarrow x$ $\odot \rightarrow x$ $\oplus \rightarrow \checkmark$ $D_f = (0, +\infty)$	2
الف) $y = \sqrt{2 - [x]}$ $2 - [x] \geq 0$ $[x] \leq 2$ $x \leq 2$ $D_f = (-\infty, 2]$	ب) $y = \frac{1}{\sqrt{2 - [x]}}$ $2 - [x] > 0$ $[x] < 2$ $x < 2$ $D_f = (-\infty, 2)$	3
الف) $y = \sqrt{[x - \frac{1}{x}] + [x + \frac{1}{x}]}$ $[x + \frac{1}{x}] \geq \frac{1}{x}$ $[x - \frac{1}{x}] + [x + \frac{1}{x}] \geq 0$ $[x - 1 + \frac{1}{x}] + [x + \frac{1}{x}] \geq 0$ $[x + \frac{1}{x}] \times 2 - 1 \geq 0$ $x + \frac{1}{x} \geq 1$ $x \geq \frac{1}{x}$ $D_f = [\frac{1}{x}, +\infty)$	ب) $y = \sqrt{[x - \frac{1}{x}] + [x + \frac{1}{x}]}$ $x - \frac{1}{x} \in \mathbb{Z}$ $[x - \frac{1}{x}] + [x + \frac{1}{x}] \geq 0$ $[x - \frac{1}{x}] + [-(x - \frac{1}{x})] \geq 0$ $[m] + [-m] \geq 0$ $m \in \mathbb{Z} \Rightarrow [m] + [-m] = 0$ $m \notin \mathbb{Z} \Rightarrow [m] + [-m] = -1$ $D_f = \{x x = k - \frac{1}{x}, k \in \mathbb{Z}\}$	4
الف) $y = \frac{x}{\sin x - 1}$ $\sin x - 1 \neq 0$ $\sin x \neq 1$ $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{2}\}$ 	ب) $y = \frac{x}{x \sin x - 1}$ $x \sin x - 1 \neq 0$ $\sin x \neq \frac{1}{x}$ $\sin x \neq \frac{\sqrt{x}}{x}$ 	5

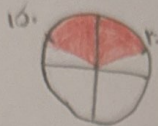
$$الف) y = \sqrt{r \sin x - 1}$$

$$r \sin x - 1 \geq 0$$

$$r \sin x \geq 1$$

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

$$D_f = \left[r \arcsin \frac{1}{r}, r \arcsin \frac{1}{r} + \frac{5\pi}{6} \right]$$

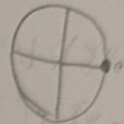


$$ب) y = \sqrt{\cos x - 1}$$

$$\cos x - 1 \geq 0$$

$$\cos x \geq 1$$

$$D_f = \{r \mid r = \pi\}$$



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$$الف) \cos y = |x| - r$$

$$-1 \leq |x| - r \leq 1$$

$$r \leq |x| \leq r+1$$

$$r \leq x \leq r+1$$

$$-r-1 \leq x \leq -r$$

$$D_f = [-r-1, -r] \cup [r, r+1]$$

$$ب) y = \arcsin(x^r + r x + 1)$$

$$\Rightarrow -1 \leq x^r + r x + 1 \leq 1$$

$$\begin{cases} x^r + r x + 1 \geq 0 \Rightarrow (x+r)(x+1) \geq 0 \Rightarrow (-\infty, -r] \cup [-1, +\infty) \text{ I} \\ x^r + r x \leq 0 \Rightarrow x(x+r) \leq 0 \Rightarrow \begin{cases} -r \leq x \leq 0 \\ 0 \leq x \leq -r \end{cases} \text{ II} \end{cases}$$

$$\Rightarrow D_f = [-r, -1] \cup [0, r]$$

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$$الف) y = \sqrt{x - \log_2(x-1)}$$

$$x-1 > 0 \Rightarrow x > 1$$

$$x - \log_2(x-1) \geq 0 \Rightarrow \log_2(x-1) \leq x \Rightarrow (x-1) \leq 2^x \Rightarrow x \geq 1$$

$$\Rightarrow 1 \leq x < 11 \Rightarrow D_f = (1, 11]$$

$$ب) y = \log(x^2 - x)$$

$$x^2 - x > 0 \Rightarrow x(x-1)(x+1) > 0$$

$$\Rightarrow (-1, 0) \cup (1, +\infty)$$

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

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$$الف) y = \frac{r}{r^x + 1}$$

$$r^x + 1 \neq 0 \Rightarrow r^x \neq -1 \Rightarrow D_f = \mathbb{R}$$

$$ب) y = \frac{r}{r^x - 1}$$

$$r^x - 1 \neq 0 \Rightarrow r^x \neq 1 \Rightarrow x \neq 0$$

$$D_f = \mathbb{R} - \{0\}$$

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$$ج) y = \frac{r}{r^x - r}$$

$$r^x - r \neq 0 \Rightarrow r^x \neq r \Rightarrow D_f = \mathbb{R} - \{\log_r r\}$$

$$د) y = \frac{r}{r^x - r}$$

$$r^x - r \neq 0 \Rightarrow r^x \neq r \Rightarrow D_f = \mathbb{R} - \{\log_r r\}$$

$$الف) y = (r x + 1)!$$

$$r x + 1 \in \mathbb{W} \Rightarrow r x \in \mathbb{W} - 1 \Rightarrow x \in \frac{\mathbb{W} - 1}{r}$$

$$D_f = \left\{ x \mid x \in \frac{\mathbb{W} - 1}{r} \right\}$$

$$ب) y = \left(\frac{r x - r}{r x - 6} \right)!$$

$$\frac{r x - r}{r x - 6} \in \mathbb{W} \Rightarrow r x - r \in r \mathbb{W} - 6 \mathbb{W}$$

$$\Rightarrow r x - r \in r \mathbb{W} - 6 \mathbb{W} \Rightarrow x(r - r \mathbb{W}) \in r - 6 \mathbb{W}$$

$$x \in \frac{r - 6 \mathbb{W}}{r - r \mathbb{W}}$$

$$D_f = \left\{ x \mid x \in \frac{r - 6 \mathbb{W}}{r - r \mathbb{W}} \right\}$$

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