

تالیف

پارسا صادقی

16, 8

الف) $y = \sqrt{\frac{x^2 - 4x}{x^2 - x}} \Rightarrow x^2 - x \neq 0$
 $x(x-1) \neq 0$
 $x^2 - x \geq 0$
 $x(x-1) \geq 0$
 $D_f = (-1, 1) \cup [2, +\infty) - \{0\}$

ب) $y = \sqrt{\frac{x^5 - x^3}{x^2 - x}} \Rightarrow x^2 - x \neq 0$
 $x(x-1) \neq 0$
 $x^5 - x^3 \geq 0$
 $x^3(x^2 - 1) \geq 0$
 $D_f = (-1, 1) \cup [1, +\infty)$
 $R = \{-1, 0, 1\}$

الف) $y = \frac{x+1}{\sqrt{x+|x|}} \Rightarrow x+|x| \neq 0$
 $|x| \neq -x$
 $D_f = (0, +\infty)$

ب) $y = \frac{1}{\sqrt{x|x|}} \Rightarrow x|x| \neq 0$
 $D_f = (0, +\infty)$

الف) $y = \sqrt{r - [x]}$
 $r - [x] \geq 0$
 $[x] \leq r$
 $D_f = (-\infty, r)$

ب) $y = \frac{1}{\sqrt{r - [x]}} \Rightarrow r - [x] \neq 0$
 $D_f = (-\infty, r)$

الف) $y = \sqrt{[x - \frac{1}{r}] + [x + \frac{r}{r}]}$
 $[x - \frac{1}{r}] + [x + \frac{r}{r}] \geq -1 \rightarrow 2[x - \frac{1}{r}] \geq -1 \rightarrow x - \frac{1}{r} \geq -\frac{1}{2} \rightarrow x \geq \frac{1}{r} - \frac{1}{2}$
 $D_f = (\infty, \frac{1}{r} - \frac{1}{2}] \cup [\frac{1}{r} + \frac{1}{2}, +\infty)$
 $[x] + [-x] \in \mathbb{Z} \rightarrow 0$
 $[x] + [-x] \notin \mathbb{Z} \rightarrow -1$
 $D_f = \mathbb{R}$

الف) $y = \frac{r}{\sin x - 1} \Rightarrow \sin x - 1 \neq 0$
 $\sin x \neq 1$
 $D_f = \{rK\pi + \frac{\pi}{r}\}$

ب) $y = \frac{r}{r \sin^2 x - 1} \Rightarrow r \sin^2 x - 1 \neq 0$
 $r \sin^2 x \neq 1$
 $\sin^2 x \neq \frac{1}{r}$
 $\sin x \neq \pm \frac{\sqrt{r}}{r}$
 $D_f = \mathbb{R} - \{rK\pi + \frac{\pi}{r}, rK\pi + \frac{r\pi}{r}\}$
 $\{K\pi \pm \frac{\pi}{r}\}$

$$الف) y = \sqrt{x \sin x - 1}$$

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

$$x \sin x \geq 1$$

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



$$D_f = \left\{ 2k\pi + \frac{\pi}{2}, 2k\pi + \frac{3\pi}{2} \right\}$$

باید به سمت بازه‌های

$$ب) y = \sqrt{\cos x - 1}$$

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

$$\cos x \geq 1$$



$$D_f = \{2k\pi\}$$

$$الف) \cos y = |x| - 3$$

$$-1 \leq |x| - 3 \leq 1$$

$$2 \leq |x| \leq 4 \quad D_f = [-4, -2] \cup [2, 4]$$

$$ب) y = \arcsin(x^2 + 2x + 1)$$

1, V8

$$x^2 + 2x + 1 \leq 1 \rightarrow x^2 + 2x \leq 0 \quad x(x+2) \leq 0$$

$$جواب = [-2, -1] \cup [0, 1]$$

$$x^2 + 2x + 1 \geq -1 \quad x^2 + 2x + 2 \geq 0 \quad (x+1)(x+2) \geq 0$$

$$الف) y = \sqrt{2 - \log_r(x-2)}$$

$$x-2 > 0$$

$$x > 2$$

$$2 - \log_r(x-2) \geq 0$$

$$x-2 \leq 9 \rightarrow x \leq 11$$

$$\log_r(x-2) \leq 2$$

$$D_f = (2, 11]$$

$$ب) y = \log(x^2 - x)$$

$$x^2 - x > 0$$

$$x(x-1) > 0$$

$$\frac{-1}{-} \frac{0}{+} \frac{1}{+}$$

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

(2)

$$الف) y = \frac{x}{x^2 + 1} \quad D_f = \mathbb{R}$$

$$ب) y = \frac{x}{x^2 - 1}$$

$$x^2 - 1 \neq 0$$

$$D_f = \mathbb{R} - \{1, -1\}$$

$$ج) y = \frac{x}{x^2 - 2}$$

$$x^2 - 2 \neq 0$$

$$\log_r x = \frac{1}{r} \quad D = \mathbb{R} - \left\{ \frac{1}{r} \right\}$$

$$د) y = \frac{x}{x^2 - 3}$$

$$x^2 - 3 \neq 0 \rightarrow \log_r x \quad D_f = \mathbb{R} - \left\{ \log_r 3 \right\}$$

$$g = (f_{x+1})!$$

$$f_{x+1} \in W$$

$$f_x \in W-1 \quad x \in \frac{W-1}{r} \quad \{x \mid x = \frac{k-1}{r}, k \in W\}$$

1, 2 ✓

$$\therefore g = \left(\frac{rx - r}{rx - 0} \right)! \quad \frac{rx - r}{rx - 0} \in W \rightarrow rx - r \in rW - 0W$$

$$\{x \mid x = \frac{rxk - 0k + r}{r}, k \in W\}$$

$$\begin{aligned} rx - r &\in rW - 0W \\ rx - rxW &\in r - 0W \\ rx &\in rW - 0W + r \\ x &\in \frac{r - 0W}{r - rx} \end{aligned}$$

$$\mathcal{P}_g = \{x \mid x = \frac{r - 0W}{r - rx}, k \in W\}$$