

(فاصله ماسمی)

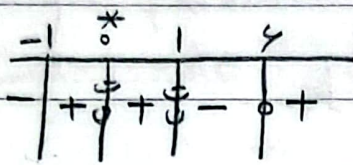
«به نام خدا»

تکلیف شماره ۶

۲. آتین

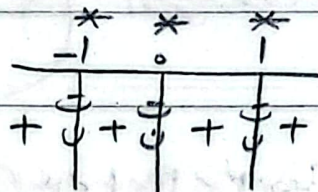
الف) $\frac{x(x-2)}{x(x^2-1)} \geq 0$

$\frac{(x-1)(x+1)}{x(x^2-1)}$



$D_f = (-1, 0) \cup (0, 1) \cup [2, +\infty)$ ①

ب) $\frac{x^2(x^2-1)}{x(x^2-1)} = \frac{x^2(x+1)(x-1)}{x(x+1)(x-1)} \geq 0$



$D_f = \mathbb{R} - \{0, \pm 1\}$

الف) $x + |x| > 0$

$\begin{matrix} \oplus \checkmark \\ \ominus \times \\ \ominus \times \end{matrix} \rightarrow D_f = (0, +\infty)$ ②

ب) $x|x| > 0$

$\begin{matrix} \oplus \checkmark \\ \ominus \times \\ \ominus \times \end{matrix} \rightarrow D_f = (0, +\infty)$

الف) $2 - [x] \geq 0 \rightarrow 2 \geq [x] \rightarrow x < 3 \quad D_f = (-\infty, 3)$ ③

ب) $2 - [x] > 0 \rightarrow 2 > [x] \rightarrow x < 2 \quad D_f = (-\infty, 2)$

الف) $1 + [x - \frac{1}{3}] + [x + \frac{2}{3}] \geq 1 \rightarrow [x + \frac{2}{3}] + [x + \frac{2}{3}] \geq 1$ ④

$[x + \frac{2}{3}] \geq \frac{1}{2} \rightarrow x + \frac{2}{3} \geq 1 \rightarrow x \geq \frac{1}{3} \quad D_f = [\frac{1}{3}, +\infty)$

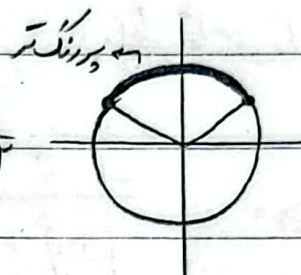
ب) $a \in \mathbb{Z} \rightarrow \sqrt{a^2+1} \rightarrow a \in \mathbb{Z} \rightarrow x - \frac{1}{3} \in \mathbb{Z} \quad D_f = \{x | x = k + \frac{1}{3}, k \in \mathbb{Z}\}$

$a \notin \mathbb{Z} \rightarrow -1x \quad x \in \mathbb{Z} + \frac{1}{3}$

الف) $\sin x - 1 \neq 0 \rightarrow \sin x \neq 1 \rightarrow x \neq \frac{\pi}{2}$ $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{2}\}$ ⑤

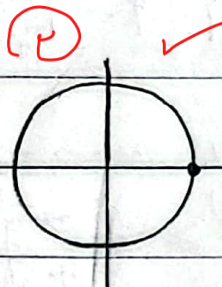
ب) $r \sin^2 x - 1 \neq 0 \rightarrow r \sin^2 x \neq 1 \rightarrow \sin^2 x \neq \frac{1}{r} \rightarrow \sin x \neq \pm \frac{1}{\sqrt{r}} = \pm \frac{\sqrt{r}}{r}$

$D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{r}, 2k\pi + \pi - \frac{\pi}{r}\}$



الف) $r \sin x - 1 \geq 0 \rightarrow r \sin x \geq 1 \rightarrow \sin x \geq \frac{1}{r}$

$D_f = [2k\pi + \frac{\pi}{r}, 2k\pi + \pi - \frac{\pi}{r}]$

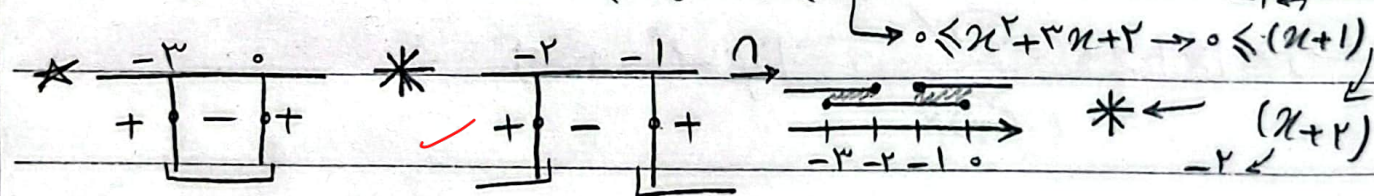


ب) $\cos x - 1 \geq 0 \rightarrow \cos x \geq 1$

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

الف) $-1 \leq |x| - 3 \leq 1 \rightarrow 2 \leq |x| \leq 4$ $\rightarrow 2 \leq x \leq 4$ $\rightarrow D_f = [-4, -2] \cup [2, 4]$ ⑥

ب) $-1 \leq x^2 + 3x + 1 \leq 1 \rightarrow -2 \leq x(x+3) \leq 0$ $\rightarrow x(x+3) \leq 0$ $\rightarrow \star$



$D_f = [-3, -2] \cup [-1, 0]$

الف) $r \geq \log_3^{(x-2)} \rightarrow 9 \geq x-2 \rightarrow 11 \geq x$ $/ x-2 > 0 \rightarrow x > 2$ ⑦

$D_f = (2, 11]$

ب) $x(x^2-1) > 0 \rightarrow x(x+1)(x-1) > 0$ $D_f = (-1, 0) \cup (1, +\infty)$

$$\text{الف) } K^x + 1 \neq 0 \rightarrow K^x \neq -1 \Rightarrow D_f = \mathbb{R} \setminus \{-1\} \quad \text{ب) } K^x - 1 \neq 0 \rightarrow K^x \neq 1, \quad (9)$$

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

$$\text{ج) } K^x - 2 \neq 0 \rightarrow K^x \neq 2 \rightarrow x \neq \log_K 2 \rightarrow D_f = \mathbb{R} - \{\log_K 2\}$$

$$\text{د) } K^x - 3 \neq 0 \rightarrow K^x \neq 3 \rightarrow x \neq \log_K 3 \rightarrow D_f = \mathbb{R} - \{\log_K 3\}$$

$$\text{الف) } Kx + 1 \in W \rightarrow Kx \in W - 1 \rightarrow x \in \frac{W-1}{K} \rightarrow D_f = \left\{ x \mid x = \frac{K-1}{K}, K \in W \right\} \quad (10)$$

$$\text{ب) } \frac{3x-2}{2x-5} \in W \rightarrow x \in -\frac{-5W+2}{2W-3} = \frac{5W-2}{2W-3} \rightarrow D_f = \left\{ x \mid x = \frac{5K-2}{2K-3}, K \in W \right\}$$