

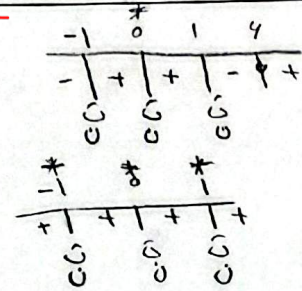
الف) $\frac{x^2 - 4x}{x^3 - x} > 0$ $\frac{x(x-4)}{x(x^2-1)} = \frac{x(x-4)}{x(x-1)(x+1)}$

$(-1, 1) \cup [4, +\infty) - \{0\}$

ب) $\frac{x^3 - x^2}{x^3 - x} > 0$ $\frac{x^2(x-1)}{x(x^2-1)} = \frac{x^2(x-1)(x+1)}{x(x-1)(x+1)}$

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

۱, ۱, ۱, ۱ ✓



الف) $\sqrt{x+|x|} > 0$ $x+|x| > 0$ $|x| > -x$ $D_f = \mathbb{R}^+$

ب) $\sqrt{x+|x|} > 0$ $x+|x| > 0 \Rightarrow D_f = \mathbb{R}^+$

-x
+
✓

۲ ✓

الف) $2 - [x] > 0$ $[x] \leq 2 \Rightarrow x < 3 \Rightarrow D_f = (-\infty, 3)$

۳ ✓

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

الف) $[x - \frac{1}{p}] + [x + \frac{p}{p}] \geq 0 \Rightarrow [x + \frac{p}{p} - 1] + [x + \frac{p}{p}] \geq 0$ $[x + \frac{p}{p}] - 1 + [x + \frac{p}{p}] \geq 0$

$2[x + \frac{p}{p}] \geq 1$ $[x + \frac{p}{p}] \geq \frac{1}{2} \Rightarrow x + \frac{p}{p} \geq 1$ $x \geq \frac{1}{p} \Rightarrow [\frac{1}{p}, +\infty)$

ب) $[x - \frac{1}{p}] + [-x + \frac{1}{p}] \geq 0$

$[a] + [-a] = 0 \Rightarrow a \in \mathbb{Z}$

$x - \frac{1}{p} \in \mathbb{Z} \Rightarrow D = \{x / x = k + \frac{1}{p}, k \in \mathbb{Z}\}$

الف) $\sin x - 1 \neq 0$ $\sin x \neq 1 \Rightarrow x \neq 90^\circ \Rightarrow D = \mathbb{R} - \{2k\pi + \frac{\pi}{2}\}$

ب) $2 \sin^2 x \neq 1$ $\sin^2 x \neq \frac{1}{2}$ $\sin x \neq \pm \frac{1}{\sqrt{2}} \Rightarrow D_f = \{ \frac{k\pi}{2} + \frac{\pi}{4} \}$

$$|\sin x - 1| > 0 \quad |\sin x| > 1 \quad \sin x > \frac{1}{p} \quad \left[2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4} \right]$$

باید بازه بی

۶

$$(\cos x - 1) > 0 \quad (\cos x) > 1 \quad \{2k\pi\} \quad \underline{1, \forall \Delta} \quad \checkmark$$

۷

الف) $-1 \leq |x| - 3 \leq 1 \Rightarrow 2 \leq |x| \leq 4 \quad 2 \leq x \leq 4 \quad -4 \leq x \leq -2$

$$D = [-4, -2] \cup [2, 4]$$

1, \forall \Delta

ب) $-1 \leq x^2 + 3x + 1 \leq 1$

$$x^2 + 3x + 1 \leq 1$$

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

$x^2 + 3x + 2 > 0 \quad x \leq -2 \quad (x+1)(x+2) > 0 \quad x > -1$

$$x^2 + 3x \leq 0$$

$$x(x+3) \leq 0$$

$-3 \leq x \leq 0$

۸

الف) $x - 2 > 0 \quad x > 2$
 $2 - \log_{x-2} > 0 \quad \log_{x-2} \leq 2 \Rightarrow x - 2 \leq 9 \quad x \leq 11 \quad \} \quad (2, 11]$

ب) $x^3 - x > 0 \quad x(x^2 - 1) > 0 \Rightarrow x(x-1)(x+1) > 0$

$-1 \quad 0 \quad 1$
 $- \quad + \quad - \quad +$

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

۹

الف) $\epsilon^x \neq 1 \Rightarrow D_f = \mathbb{R}$

ب) $\epsilon^x - 1 \neq 0 \quad \epsilon^x \neq 1$

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

۲) $\epsilon^{x-2} \neq 0 \quad \epsilon^x \neq 2$

$\log_{\epsilon} 2 \Rightarrow D = \mathbb{R} - \{\log_{\epsilon} 2\}$

۱) $\epsilon^{x-2} \neq 0 \quad \epsilon^x \neq 2$

$\log_{\epsilon} 2 \Rightarrow D = \mathbb{R} - \{\log_{\epsilon} 2\}$

۱۰

الف) $\epsilon^{x+1} \in \omega \quad \epsilon^x \in \omega - 1 \quad x \in \frac{\omega - 1}{\epsilon} \Rightarrow D = \{x \mid x = \frac{k-1}{\epsilon}, k \in \omega\}$

ب) $\frac{\epsilon^x - \epsilon}{\epsilon^x - \omega} \in \omega \quad \epsilon^x - \epsilon \in \epsilon^x \omega - \omega \quad \epsilon^x - \epsilon \omega = \epsilon - \omega \Rightarrow$

$$x = \frac{\epsilon - \omega}{\epsilon - \epsilon \omega}$$

$D = \{x \mid x = \frac{\epsilon - \omega k}{\epsilon - \epsilon k}, k \in \omega\}$