

۱۴، ۷۵

۱) $\frac{n^2-6n}{n^3-n} > 0$ (الف)

$\Rightarrow \frac{n(n-6)}{n(n^2-1)} = \frac{n(n-6)}{n(n-1)(n+1)}$

درجه‌های صورت = ۰۹، ۱۰ - ۱
درجه‌های مخرج = ۰۹، ۱۰ - ۱

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

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

۱، ۷۵

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

۲) $x + |x| > 0$ (الف)

$\oplus \ominus \ominus$
 $\checkmark \times \times$

$\Rightarrow D_f = R^+ \subseteq (0, +\infty)$

۲) $x|x| > 0$ (ب)

$\oplus \ominus \ominus$
 $\checkmark \times \times$

$\Rightarrow D_f = R^+ \subseteq (0, +\infty)$

۳) $2 - [x] > 0$ (الف)

$\Rightarrow [x] < 2$

$\Rightarrow x < 3$

$\Rightarrow D_f = (-\infty, 3)$

۲) $2 - [x] > 0$ (ب)

$\Rightarrow [x] < 2$

$\Rightarrow x < 3$

$\Rightarrow D_f = (-\infty, 3)$

۴) $[x - \frac{1}{x}] + [x + \frac{1}{x}] > 0$ (الف)

$\Rightarrow [x + \frac{1}{x} - 1] + [x + \frac{1}{x}] > 0$

$\Rightarrow [x + \frac{1}{x}] - 1 + [x + \frac{1}{x}] > 0$

$\Rightarrow 2[x + \frac{1}{x}] > 1$

$\Rightarrow [x + \frac{1}{x}] > \frac{1}{2}$

$\Rightarrow x + \frac{1}{x} > \frac{1}{2} \Rightarrow x > \frac{1}{x} \Rightarrow D_f = [\frac{1}{x}, +\infty)$

۲) $[x - \frac{1}{x}] + [-x + \frac{1}{x}] > 0$ (ب)

$\Rightarrow [x - \frac{1}{x}] + [-(x - \frac{1}{x})] > 0$

$\Rightarrow x - \frac{1}{x} \in \mathbb{Z}$

$\Rightarrow D_f = \{x | x = k + \frac{1}{x}, k \in \mathbb{Z}\}$

۵) $\sin x - 1 \neq 0$ (الف)

$\Rightarrow \sin x \neq 1$



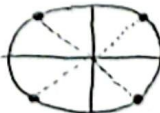
$\Rightarrow D_f = R - \{2k\pi + \frac{\pi}{2}\}$

۲) $2 \sin^2 x - 1 \neq 0$ (ب)

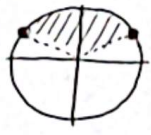
$\Rightarrow 2 \sin^2 x \neq 1$

$\Rightarrow \sin^2 x \neq \frac{1}{2}$

$\Rightarrow \sin x \neq \pm \frac{\sqrt{2}}{2}$



$\Rightarrow D_f = R - \{k\pi \pm \frac{\pi}{4}\}$

الف) $2 \sin x - 1 > 0$ $\Rightarrow 2 \sin x > 1$ $\Rightarrow \sin x > \frac{1}{2}$ $\Rightarrow D_f = \left[2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6} \right]$ Ⓟ ✓ 	ب) $\cos x - 1 > 0$ $\Rightarrow \cos x > 1$ $\Rightarrow D_f = \{2k\pi\}$ 	6
الف) $-1 < x - 3 < 1$ $\Rightarrow 2 < x < 4$ $\Rightarrow 2 < x < 4, -4 < x < -2$ $\Rightarrow D_f = [-4, -2] \cup [2, 4]$ Ⓟ ✓	ب) $-1 < x^2 + 3x + 1 < 1$ $\Rightarrow x^2 + 3x + 1 < 1 \Rightarrow x^2 + 3x < 0 \Rightarrow x(x+3) < 0$ $\Rightarrow x \in (-3, 0)$ (I) $\Rightarrow x^2 + 3x + 1 > -1 \Rightarrow x^2 + 3x + 2 > 0 \Rightarrow (x+1)(x+2) > 0$ $\Rightarrow x \in (-\infty, -2) \cup (-1, \infty)$ (II) (I) $\cap$ (II) $\Rightarrow D_f = [-3, -2] \cup [-1, 0]$	7
الف) $x - 2 > 0$ $\Rightarrow x > 2$ $2 - \log_3(x-2) > 0$ $\Rightarrow \log_3(x-2) < 2$ $\Rightarrow x - 2 < 9 \Rightarrow x < 11$ $\Rightarrow D_f = (2, 11)$ Ⓟ ✓	ب) $x^3 - x > 0$ $\Rightarrow x(x^2 - 1) > 0$ $\Rightarrow x(x-1)(x+1) > 0$ $\Rightarrow x \in (-1, 0) \cup (1, \infty)$	8
الف) $\varepsilon^x + 1 \neq 0$ $\Rightarrow \varepsilon^x \neq -1 \Rightarrow D_f = \mathbb{R}$ ب) $\varepsilon^x - 1 \neq 0$ $\Rightarrow \varepsilon^x \neq 1 \Rightarrow x \neq 0$ $\Rightarrow D_f = \mathbb{R} - \{0\}$ Ⓟ ✓	ج) $\varepsilon^x - 2 \neq 0$ $\Rightarrow \varepsilon^x \neq 2 \Rightarrow x \neq \log_2 \varepsilon$ $\Rightarrow D_f = \mathbb{R} - \{\log_2 \varepsilon\}$ د) $\varepsilon^x - 3 \neq 0$ $\Rightarrow \varepsilon^x \neq 3 \Rightarrow x \neq \log_2 3$ $\Rightarrow D_f = \mathbb{R} - \{\log_2 3\}$	9
الف) $\varepsilon x + 1 \in \mathbb{W}$ $\Rightarrow \varepsilon x \in \mathbb{W} - 1$ $\Rightarrow x \in \frac{\mathbb{W} - 1}{\varepsilon}$ $\Rightarrow D_f = \left\{ x \mid x = \frac{k-1}{\varepsilon}, k \in \mathbb{W} \right\}$ Ⓟ ✓	ب) $\frac{\varepsilon x - 2}{\varepsilon x - \omega} \in \mathbb{W}$ $\Rightarrow \varepsilon x - 2 \in \varepsilon \mathbb{W} x - \omega \mathbb{W}$ $\Rightarrow \varepsilon x - \varepsilon \mathbb{W} x \in 2 - \omega \mathbb{W}$ $\Rightarrow x = \frac{2 - \omega \mathbb{W}}{\varepsilon - \varepsilon \mathbb{W}} = \frac{\omega \mathbb{W} - 2}{\varepsilon \mathbb{W} - \varepsilon}$ $\Rightarrow D_f = \left\{ x \mid x = \frac{\omega k - 2}{\varepsilon k - \varepsilon}, k \in \mathbb{W} \right\}$	10