

الف) $f = \frac{n+c}{2n^2+c^2n^2-2cn+c} \rightarrow 2n^2+c^2n^2-2cn+c \neq 0 \rightarrow (n-1) \dots$
 $\rightarrow = (n-1)(2n^2+c^2n^2-2cn+c) \rightarrow (n-1)(n+c)(n-\frac{1}{c}) \rightarrow D_f = \mathbb{R} - \{-c, \frac{1}{c}\}$

ب) $2n^2+9n^2+10n+c \neq 0 \rightarrow (n+1) \dots \rightarrow 2n^2+9n^2+10n+c \neq 0$
 $\rightarrow = (n+1)(2n^2+9n^2+10n+c) \rightarrow (n+1)(n+c)(n+\frac{1}{c}) \rightarrow D_f = \mathbb{R} - \{-\frac{1}{c}, -1, -c\}$

الف) $2n^2-2n^2+2n-1 \neq 0 \rightarrow (n-1)(n^2-n+1) \rightarrow \Delta < 0$
 $\rightarrow D_f = \mathbb{R} - \{1\}$

ب) $y = \sqrt{\frac{n+c}{n^2-2n^2+2n-1}} \geq 0 \rightarrow \frac{n+c}{n^2-2n^2+2n-1} \geq 0 \rightarrow \frac{n+c}{(n-1)(n^2-n+1)} \geq 0$
 $\rightarrow \frac{-c}{1} \rightarrow D_f = (-\infty, -c] \cup (1, +\infty)$

$f = \frac{r}{n^2-d|n-1|-2n+d} \rightarrow ① n \geq 1 \rightarrow n^2-dn+d-2n+d \neq 0$
 $\rightarrow n^2-(d+2)n+2d \neq 0 \rightarrow (n-d)(n-2) \neq 0 \rightarrow n \neq \{2, d\}$
 $② n \leq 1 \rightarrow n^2-d+2n-2n+d \neq 0 \rightarrow n^2+c \neq 0 \rightarrow n \neq \{0, -c\}$
 $\rightarrow D_f = \mathbb{R} - \{-c, 0, 2, d\}$

الف) $[-n]-2 \geq 0 \rightarrow [n] \geq 2 \rightarrow -n \geq 2 \rightarrow n \leq -2$
 $\rightarrow D_f = (-\infty, -2]$

ب) $[n]^2-2[n]-c \neq 0 \rightarrow t^2-2t-c \neq 0 \rightarrow (t-c)(t+1) \neq 0 \rightarrow t \neq \{c, -1\}$
 $t \neq -1 \rightarrow [n] \neq -1 \rightarrow n \notin [-1, 0)$
 $t \neq c \rightarrow [n] \neq c \rightarrow n \notin [c, c+1)$
 $\rightarrow D_f = \mathbb{R} - [-1, 0) \cup [c, c+1)$

الف) $[n-\frac{1}{c}] + [n+\frac{1}{c}] \geq 0 \rightarrow [n+\frac{1}{c}] + [n+\frac{1}{c}] \geq 1 \rightarrow [2n+\frac{2}{c}] \geq 1$
 $\rightarrow [n+\frac{1}{c}] \geq \frac{1}{2} \rightarrow [n+\frac{1}{c}] \geq 1 \rightarrow n+\frac{1}{c} \geq 1 \rightarrow n \geq \frac{1}{c}$
 $\rightarrow D_f = [\frac{1}{c}, +\infty)$

ب) $\sqrt{[n-\frac{1}{c}] + [\frac{1}{c}-n]} = [t] + [\frac{1}{c}-t] \geq 0 \rightarrow t \in \mathbb{Z} \rightarrow (n-\frac{1}{c}) \in \mathbb{Z}$
 $n = \mathbb{Z} + \frac{1}{c} \rightarrow D_f = \{n | n = K + \frac{1}{c}, K \in \mathbb{Z}\}$

$$a) f: \frac{e^x(x+1)}{\tan x+1} \rightarrow \begin{cases} \tan x, \tan x \neq -1 \rightarrow x \neq \left\{ \frac{K\pi}{2} \right\} \\ \text{ممنوع } \tan x = -1 \rightarrow x \neq \left\{ K\pi + \frac{3\pi}{4} \right\} \end{cases}$$

$$\rightarrow D_f: \mathbb{R} - \left\{ \frac{K\pi}{2} \right\} - \left\{ K\pi + \frac{3\pi}{4} \right\} \quad \mathbb{C}_f$$

$$b) 1 - \varepsilon \sin x \geq 0 \rightarrow \frac{1}{\varepsilon} \geq \sin x \rightarrow \frac{1}{\varepsilon} \geq \sin x \geq -\frac{1}{\varepsilon} \rightarrow x \in \left[K\pi - \frac{\pi}{\varepsilon}, K\pi + \frac{\pi}{\varepsilon} \right]$$

$$\rightarrow D_f: \left[K\pi - \frac{\pi}{\varepsilon}, K\pi + \frac{\pi}{\varepsilon} \right] \quad \mathbb{C}_f$$

$$a) 2 \sin x = 1 \geq 0 \rightarrow \sin x \geq \frac{1}{2} \rightarrow x \in \left[2K\pi + \frac{\pi}{6}, 2K\pi + \frac{5\pi}{6} \right]$$

$$\rightarrow D_f: \left[2K\pi + \frac{\pi}{6}, 2K\pi + \frac{5\pi}{6} \right] \quad \mathbb{C}_f$$

$$b) 1 - 2 \cos x \geq 0 \rightarrow \frac{1}{2} \geq \cos x \rightarrow \left[2K\pi + \frac{\pi}{3}, 2K\pi + \frac{5\pi}{3} \right]$$

$$\rightarrow D_f: \left[2K\pi + \frac{\pi}{3}, 2K\pi + \frac{5\pi}{3} \right] \quad \mathbb{C}_f$$

$$a) 1 \geq x^2 + 2x + 1 \geq -1 \rightarrow \begin{cases} ① x^2 + 2x + 2 \geq 0 \rightarrow (x+1)(x+2) \geq 0 \\ \rightarrow x \in (-\infty, -2] \cup [-1, +\infty) \\ ② -1 \geq x^2 + 2x \rightarrow x \in [-1, 0] \end{cases}$$

$$\text{①} \cap \text{②} \rightarrow D_f: [-1, -2] \cup [-1, 0] \quad \mathbb{C}_f$$

$$b) 1 \geq \sqrt{d-2x} \geq -1 \rightarrow \begin{cases} d-2x \leq 1 \rightarrow 2 \leq x \\ d-2x \geq -1 \rightarrow x \leq \frac{d+1}{2} \end{cases} \rightarrow 2 \leq x \leq \frac{d+1}{2}$$

$$\rightarrow D_f: \left[2, \frac{d+1}{2} \right] \quad \mathbb{C}_f$$

$$a) f: \log_{\frac{1}{f}}(1 - \log_{\frac{1}{f}} x) \rightarrow \underline{x \geq 0} \rightarrow 1 - \log_{\frac{1}{f}} x > 0 \rightarrow 1 > \log_{\frac{1}{f}} x$$

$$\rightarrow x < c' \rightarrow \underline{x \leq c} \rightarrow D_f: (0, c) \quad \mathbb{C}_f$$

$$b) f: \log_{\frac{1}{f}}(1 - \log_{\frac{1}{f}} x) \rightarrow \underline{x \geq 0} \rightarrow 1 - \log_{\frac{1}{f}} x > 0 \rightarrow 1 > \log_{\frac{1}{f}} x$$

$$\rightarrow x > \left(\frac{1}{f}\right)' \rightarrow \underline{x > \frac{1}{f}} \rightarrow D_f: \left(\frac{1}{f}, +\infty\right) \quad \mathbb{C}_f$$

$$a) 2^{x^2-2x} - 2^x \geq 0 \rightarrow 2^x \left(\frac{2^{x^2-2x}}{2^x} - 1 \right) \geq 0 \rightarrow \frac{2^{x^2-2x}}{2^x} \geq 1$$

$$\rightarrow (x^2 - 2x + 2) \geq 0 \rightarrow \frac{x^2 + 2}{-1} + \frac{2}{1} \rightarrow D_f: [1, 2] \quad \mathbb{C}_f$$

$$b) f: \left(\frac{c^n + d}{r^n + \varepsilon} \right)! \rightarrow \begin{cases} r^n + \varepsilon \neq 0 \rightarrow n \neq -r \\ (c)! \rightarrow c \in \mathbb{W} \rightarrow \frac{c^n + d}{r^n + \varepsilon} \in \mathbb{W} \end{cases}$$

$$\rightarrow -\frac{\varepsilon W - d}{rW - c} = x \rightarrow D_f: \left\{ n \mid x = \frac{d - \varepsilon K}{rK - c}, K \in \mathbb{W} \right\} \quad \mathbb{C}_f$$