

الف) $\frac{x+3}{(x-1)(x-\frac{1}{x})(x+3)(x)} \rightarrow D_f = \mathbb{R} - \{-3, \frac{1}{x}, -3\}$

ب) $\frac{x+3}{(x+1)(x+\frac{1}{x})(x+3)(x)} \rightarrow D_f = \mathbb{R} - \{-3, -1, -\frac{1}{x}\}$

الف) $\frac{x+3}{(x-1)(x^2-x+1)} \rightarrow D_f = \mathbb{R} - \{1\}$
 ریشه ندارد $\Delta < 0$

ب) $\sqrt{\frac{x+3}{(x-1)(x^2-x+1)}} \rightarrow \frac{-3}{+\infty - \frac{1}{+}} \rightarrow D_f = \mathbb{R} - (-3, 1]$

$y = \frac{y}{x^2 - \omega |x-1| - 2x + \omega}$
 if $x < 1 \rightarrow x^2 - \omega + \omega x - 2x + \omega \neq 0$
 $x(x+3) \neq 0 \rightarrow x \neq 0, x \neq -3$ ①
 if $x \geq 1 \rightarrow x^2 - \omega x + \omega - 2x + \omega \neq 0$
 $(x-2)(x-\omega) \neq 0 \Rightarrow x \neq 2, x \neq \omega$ ②
 ① $\cup$ ② $\rightarrow D_f = \mathbb{R} - \{-3, 0, 2, \omega\}$
 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82, 84, 86, 88, 90, 92, 94, 96, 98, 100

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

ب) $[x]^2 - 2[x] - 3 \neq 0 \rightarrow ([x]-3)([x]+1) \neq 0$
 $[x] \neq -1$ ①
 $[x] \neq 3$ ②
 ① $\cup$ ② $\rightarrow D_f = (-\infty, -1) \cup [0, 3) \cup [4, +\infty)$

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

ب) $[x - \frac{1}{x}] + [\frac{1}{x} - x] \geq 0$
 ① ②
 $\frac{y}{x} \quad \frac{1}{x} \quad \frac{x}{x}$
 2 $\rightarrow 0$ 1 $\rightarrow 0$
 if $x < 0 \rightarrow D_f = \{x | x = -k + \frac{1}{x}, k \in \mathbb{N}\}$
 if $x > 0 \rightarrow D_f = \{x | x = k - \frac{1}{x}, k \in \mathbb{N}\}$

الف) $\frac{\cot x + 1}{\tan x + 1} = \frac{\cot x + \tan}{\tan x + 1} \rightarrow D_f = \mathbb{R} - \left\{ k\pi, k\pi + \frac{\pi}{2} \right\}$

ب) $1 - \sqrt{2} \sin x \geq 0 \rightarrow \sin x \leq \frac{1}{\sqrt{2}} \rightarrow -\frac{1}{\sqrt{2}} \leq \sin x \leq \frac{1}{\sqrt{2}}$

$D_f = \left[2k\pi - \frac{\pi}{4}, 2k\pi + \frac{\pi}{4} \right] \cup \left[2k\pi + \frac{3\pi}{4}, 2k\pi + \frac{5\pi}{4} \right]$

الف) $\sqrt{2} \sin x - 1 \geq 0 \rightarrow \sin x \geq \frac{1}{\sqrt{2}} \rightarrow D_f = \left[2k\pi + \frac{\pi}{4}, 2k\pi + \frac{3\pi}{4} \right]$

ب) $1 - \sqrt{2} \cos x \geq 0 \rightarrow \cos x \leq \frac{1}{\sqrt{2}} \rightarrow D_f = \left[2k\pi + \frac{\pi}{4}, 2k\pi + \frac{5\pi}{4} \right]$

الف) $-1 \leq x^2 + 3x + 1 \leq 1 \rightarrow \begin{cases} x^2 + 3x \leq 0 & \text{①} \\ x^2 + 3x + 2 \geq 0 & \text{②} \end{cases} \xrightarrow{1 \cap 2} D_f = [-2, -1]$

ب) $-1 \leq \sqrt{1-x} \leq 1 \rightarrow 0 \leq 1-x \leq 1 \rightarrow D_f = \left[0, \frac{1}{2} \right]$

الف) $\log_{\sqrt{2}} x \rightarrow x > 0$ ①
 $1 - \log_{\sqrt{2}} x > 0 \rightarrow 0 < x < \sqrt{2}$ ②
 $\Rightarrow D_f = (0, \sqrt{2})$

ب) $\log_{\frac{1}{\sqrt{2}}} x \rightarrow x > 0$ ①
 $1 - \log_{\frac{1}{\sqrt{2}}} x > 0 \rightarrow x > \frac{1}{\sqrt{2}}$ ②
 $\Rightarrow D_f = \left(\frac{1}{\sqrt{2}}, +\infty \right)$

الف) $\sqrt{2}^{x^2 - x} - 1 \geq 0 \rightarrow \sqrt{2}^{x^2 - x} \geq 1 \rightarrow -x^2 + x \geq 0 \rightarrow -x^2 + x - 0 \geq 0$
 $D_f = [0, 1]$

ب) $\frac{3x + 1}{2x + 1} \in \mathbb{W} \rightarrow D_f = \left\{ x \mid x = \frac{1 - 2k}{2k - 3}, k \in \mathbb{W} \right\}$