

الف) $2\cos x + 1 \neq 0 \rightarrow 2\cos x \neq -1 \rightarrow \cos x \neq -\frac{1}{2}$
 $D_f = R - \left\{ 2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3} \right\}$ 

ب) $\cos x - 1 \neq 0 \rightarrow \cos x \neq 1 \rightarrow R \setminus D_f = R - \{2k\pi\}$

الف) $\tan x + 1 \neq 0 \rightarrow \tan x \neq -1 \rightarrow D_f = \left\{ R - \left\{ k\pi - \frac{\pi}{4}, k\pi + \frac{3\pi}{4} \right\} \right\}$
 زو رلف نیش

ب) $\cot x - 1 \neq 0 \rightarrow \cot x \neq 1 \rightarrow D_f = R - \left\{ k\pi + \frac{\pi}{4}, k\pi \right\}$

الف) $-1 \leq x^2 - 2 \leq 1 \rightarrow 1 \leq x^2 \leq 3 \rightarrow 1 \leq x \leq \sqrt{3}$
 $[1, \sqrt{3}]$

ب) $\sqrt{x} \geq 0 \rightarrow x \geq 0$
 $-1 \leq \sqrt{x} - 2 \leq 1 \rightarrow 1 \leq \sqrt{x} \leq 3 \rightarrow 1 \leq x \leq 9 \rightarrow [1, 9]$

الف) $-1 \leq |x-2| \leq 1 \rightarrow 2-1 \leq x \leq 2+1 \rightarrow [1, 3] \cup [3, 5]$

ب) $-1 \leq x^2 + 3x + 1 \leq 1$ $\begin{cases} x^2 + 3x \leq 0 \rightarrow \frac{[3, 0]}{+ - - + -} \\ x^2 + 3x + 2 \geq 0 \rightarrow \frac{(x+1)(x+2)}{+ - - + -} \end{cases} \rightarrow \frac{[-3, -2] \cup [-1, 0]}{+ - - + -}$

الف) $x^2 - 4 \geq 0 \rightarrow (x-2)(x+2) \geq 0 \rightarrow \frac{+ - - + -}{+ - - + -}$
 $R = (-\infty, -2) \cup (2, +\infty)$

ب) $2 - |x| \geq 0 \rightarrow 2 \geq |x| \rightarrow -2 \leq x \leq 2$
 $(-2, 2)$

الف) $\omega - x > 0 \rightarrow \omega > x$ } $\omega > x > 3 \rightarrow [3, \omega] - \{x\}$
 $x - 3 > 0 \rightarrow x > 3$ } $x - 3 \neq 1 \rightarrow x \neq 4$

ب) $(x-1)(x+1) > 0 \rightarrow \frac{x-1}{x+1} > 0$ } $(1, +\infty) - \{x\}$
 $x+3 > 0 \rightarrow x > -3$ } $x+3 \neq 1 \rightarrow x \neq -2$

الف) $\frac{(x-1)(x+3)}{x-2} > 0 \rightarrow \frac{x-1}{x-2} > 0$ } $(1, +\infty) - \{x\}$

ب) $\frac{x+3}{x-2} > 0 \rightarrow \frac{x+3}{x-2} > 0$ } $(-\infty, -3) \cup (2, +\infty) - \{x\}$
 $x+\omega > 0 \rightarrow x > -\omega$ } $x+\omega \neq 1 \rightarrow x \neq 1-\omega$

الف) $x-2 > 0 \rightarrow x > 2$ } $3 - \log x > 0 \rightarrow 3 > \log x \rightarrow x < 10$
 $x > 2$ } $(2, 10)$

ب) $x > 0$ } $x \log x > 0 \rightarrow \log x > \frac{1}{x}$
 $x \rightarrow (0, +\infty)$ } $x > \frac{1}{x}$

الف) $\varepsilon^{n+1} < 0 \rightarrow \varepsilon^n < -1 \rightarrow Df = \mathbb{R}$

ب) $\varepsilon^n - 1 < 0 \rightarrow \varepsilon^n < 1 \rightarrow x < 0 \rightarrow Df = \mathbb{R} - \{0\}$

ج) $\varepsilon^{n-2} < 0 \rightarrow \varepsilon^n < 4 \rightarrow \log \varepsilon < 2 \rightarrow \mathbb{R} - \log \varepsilon$

د) $\varepsilon^{n-3} < 0 \rightarrow \varepsilon^n < 8 \rightarrow \log \varepsilon < 3 \rightarrow \mathbb{R} - \log \varepsilon$

الف) $\varepsilon^{n+1} \in \mathbb{W} \rightarrow \frac{\varepsilon^{n+1}-1}{\varepsilon} \rightarrow Df = \{x \mid x = \frac{k-1}{\varepsilon}, k \in \mathbb{W}\}$

ب) $\frac{\varepsilon^{n-2}}{\varepsilon^{n-2}} \in \mathbb{W} \rightarrow \frac{\varepsilon^{n-2}}{\varepsilon^{n-2}} = \frac{\varepsilon^{n-2}}{\varepsilon^{n-2}} \rightarrow \frac{-\omega+2}{2-\omega}$
 $\varepsilon^{n-2} \varepsilon^{n-2} = -\omega+2$ } $Df = \{x \mid x = \frac{2k-2}{2k-2}, k \in \mathbb{W}\}$