

۱ $\cos x + 1 \neq 0 \Rightarrow \cos x \neq -1 \rightarrow D_{(f)} = \mathbb{R} - \left\{ 2k\pi + \frac{3\pi}{2}, 2k\pi + \frac{5\pi}{2} \right\}$ (الف)

۲ $\cos x - 1 \neq 0 \Rightarrow \cos x \neq 1 \rightarrow D_{(f)} = \mathbb{R} - \{ 2k\pi \}$ (ب)

۳ $\tan x + 1 \neq 0 \Rightarrow \tan x \neq -1 \rightarrow D_{(f)} = \mathbb{R} - \left\{ \frac{3\pi}{4} + k\pi \right\}$ (الف)
 $\tan x \xrightarrow{\text{تعریف سه}} D_{(f)} = \mathbb{R} - \left\{ \frac{\pi}{4} + k\pi \right\} \rightarrow D_{(f)} = \mathbb{R} - \left\{ \frac{\pi}{4} + k\pi, \frac{5\pi}{4} + k\pi \right\}$ (ب)

۴ $\cot x - 1 \neq 0 \Rightarrow \cot x \neq 1 \rightarrow \mathbb{R} - \left\{ \frac{\pi}{4} + k\pi \right\}$ (ب)
 $\cot x \xrightarrow{\text{تعریف سه}} \mathbb{R} - \{ k\pi \} \rightarrow D_{(f)} = \mathbb{R} - \left\{ k\pi, \frac{\pi}{4} + k\pi \right\}$ (ب)

۵ $-1 \leq x^2 - 2 \leq 1 \rightarrow -1 \leq x^2 \leq 3 \rightarrow -1 \leq x \leq \sqrt{3}$ (الف)
 $x \geq 0$ ① $\rightarrow D_{(f)} = [-\sqrt{3}, -1] \cup [1, \sqrt{3}]$ (ب)
 $-1 \leq \sqrt{x} - 2 \leq 1 \rightarrow 1 \leq \sqrt{x} \leq 3 \rightarrow 1 \leq x \leq 9$ ② $\rightarrow D_{(f)} = [1, 9]$

۶ $-1 \leq |x| - 3 \leq 1 \Rightarrow 2 \leq |x| \leq 4 \rightarrow -2 \geq x \geq -4$ (الف)
 $2 \leq x \leq 4$ (الف)
 $D_{(f)} = [-4, -2] \cup [2, 4]$ (ب)
 $-1 \leq x^2 + 3x + 1 \leq 1 \rightarrow (x+1)(x+2) \geq 0 \rightarrow \frac{-2}{+} \frac{-1}{-} \rightarrow (-\infty, -2] \cup [-1, +\infty)$ ①
 $x(x+3) \leq 0 \rightarrow \frac{-3}{+} \frac{0}{-} \rightarrow (-3, 0] \cup [0, +\infty)$ ② $\rightarrow D_{(f)} = (-\infty, -2] \cup [-1, 0] \cup [0, +\infty)$

۷ $x^2 - 4 > 0 \Rightarrow x^2 > 4 \rightarrow x > 2$ (الف)
 $x < -2$ (الف)
 $D_{(f)} = \mathbb{R} - [-2, 2]$ (ب)

۸ $2 - |x| > 0 \rightarrow |x| < 2 \rightarrow -2 < x < 2 \rightarrow D_{(f)} = (-2, 2)$ (ب)