

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

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

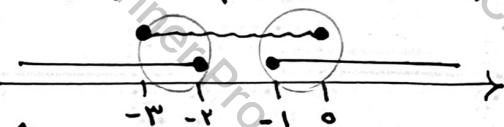
الف) $\begin{cases} \tan x + 1 \neq 0 \rightarrow \tan x \neq -1 \\ \cos x \neq 0 \end{cases} \Rightarrow D_f \subset \mathbb{R} - \{k\pi - \frac{\pi}{4}\}$

ب) $\begin{cases} \cot x - 1 \neq 0 \rightarrow \cot x \neq 1 \\ \sin x \neq 0 \end{cases} \Rightarrow D_f \subset \mathbb{R} - \{k\pi + \frac{\pi}{4}, k\pi\}$

الف) $-1 \leq x^2 - 2 \leq 1 \rightarrow 1 \leq x^2 \leq 3 \rightarrow \begin{cases} 1 \leq x \leq \sqrt{3} \\ -1 \leq x \leq -\sqrt{3} \end{cases} \Rightarrow D_f \subset [-\sqrt{3}, -1] \cup [1, \sqrt{3}]$

ب) $-1 \leq \sqrt{x} - 3 \leq 1 \rightarrow 2 \leq \sqrt{x} \leq 4 \rightarrow 4 \leq x \leq 16 \Rightarrow D_f \subset [4, 16]$

الف) $-1 \leq |x| - 3 \leq 1 \rightarrow 2 \leq |x| \leq 4 \rightarrow \begin{cases} 2 \leq x \leq 4 \\ -4 \leq x \leq -2 \end{cases} \Rightarrow D_f \subset [-4, -2] \cup [2, 4]$



ب) $-1 \leq x^2 + 3x + 1 \leq 1 \rightarrow \begin{cases} -1 \leq x^2 + 3x + 1 \rightarrow 0 \leq x^2 + 3x + 2 \rightarrow 0 \leq (x+1)(x+2) \\ x^2 + 3x + 1 \leq 1 \rightarrow x^2 + 3x \leq 0 \rightarrow x(x+3) \leq 0 \end{cases}$

$D_f \subset [-3, -2] \cup [-1, 0]$

الف) $x^2 - 4 > 0 \rightarrow x^2 > 4 \rightarrow \begin{cases} x > 2 \\ x < -2 \end{cases} \Rightarrow D_f \subset (-\infty, -2) \cup (2, \infty)$

ب) $2 - |x| > 0 \rightarrow |x| < 2 \rightarrow -2 < x < 2 \Rightarrow D_f \subset (-2, 2)$

$$\text{الف) } \begin{cases} x-x > 0 \rightarrow x < \infty \\ x+3 > 0 \rightarrow x > -3 \\ x-3 \neq 1 \rightarrow x \neq 4 \end{cases} \Rightarrow D_f = (-3, \infty) - \{4\}$$

$$\text{ب) } \begin{cases} x^2-1 > 0 \rightarrow x > 1 \rightarrow \begin{cases} x > 1 \\ x < -1 \end{cases} \\ x+3 > 0 \rightarrow x > -3 \\ x+3 \neq 1 \rightarrow x \neq -2 \end{cases} \Rightarrow D_f = (-3, -1) \cup (1, \infty) - \{-2\}$$

$$\text{الف) } \frac{x^2 - 4x + 3}{x-3} > 0 \rightarrow \frac{(x-1)(x-3)}{(x-3)} > 0 \rightarrow \frac{x-1}{1} > 0 \Rightarrow D_f = (1, \infty) - \{3\}$$

$$\text{ب) } \begin{cases} \frac{x+3}{x-2} > 0 \rightarrow \frac{x+3}{x-2} > 0 \\ x+3 > 0 \rightarrow x > -3 \\ x+3 \neq 1 \rightarrow x \neq -4 \end{cases} \Rightarrow D_f = (-\infty, -4) \cup (-2, \infty) - \{-3\}$$

$$\text{الف) } 3 - \log_2 x > 0 \rightarrow \log_2 x < 3 \rightarrow x-2 < 1 \rightarrow x < 3 \Rightarrow D_f = (2, 3]$$

$$x-2 > 0 \rightarrow x > 2$$

$$\text{ب) } \begin{cases} x > 0 \\ 2 \log_2 x - 1 > 0 \rightarrow 2 \log_2 x > 1 \rightarrow \log_2 x > \frac{1}{2} \rightarrow x > \sqrt{2} \end{cases} \Rightarrow D_f = (\sqrt{2}, \infty)$$

$$\text{الف) } x^2 + 1 \neq 0 \rightarrow x^2 \neq -1 \rightarrow D_f = \mathbb{R}$$

$$\text{ب) } x^2 - 1 \neq 0 \rightarrow x^2 \neq 1 \rightarrow x \neq 0 \rightarrow D_f = \mathbb{R} - \{0\}$$

$$\text{ج) } x^2 - 2 \neq 0 \rightarrow x^2 \neq 2 \rightarrow x \neq \pm \sqrt{2} \rightarrow D_f = \mathbb{R} - \{\pm \sqrt{2}\}$$

$$\text{د) } x^2 - 3 \neq 0 \rightarrow x^2 \neq 3 \rightarrow x \neq \pm \sqrt{3} \rightarrow D_f = \mathbb{R} - \{\pm \sqrt{3}\}$$

$$\text{الف) } 3n+1 \in \mathbb{W} \rightarrow n \in \frac{\mathbb{W}-1}{3} \Rightarrow D_f = \{n \mid n \in \frac{\mathbb{W}-1}{3}, n \in \mathbb{W}\}$$

$$\text{ب) } \frac{2n-2}{2n-5} \in \mathbb{W} \rightarrow 2n-2 \in 2n\mathbb{W} - 5\mathbb{W} \rightarrow 2n - 2n\mathbb{W} = -5\mathbb{W} + 2$$

$$n \in \frac{-2 - 5\mathbb{W}}{2 - 2\mathbb{W}}$$

$$D_f = \{n \mid n \in \frac{5\mathbb{W}-2}{2\mathbb{W}-2}, n \in \mathbb{W}\}$$