

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

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

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

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

الف) $-1 \leq x^2 - 2 \leq 1 \rightarrow 1 \leq x^2 \leq 3 \rightarrow 1 \leq |x| \leq \sqrt{3} \rightarrow D_f: [1, \sqrt{3}] \cup [-\sqrt{3}, -1]$
 $-1 \geq x \geq -\sqrt{3}$

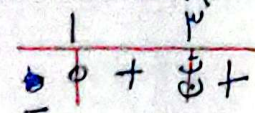
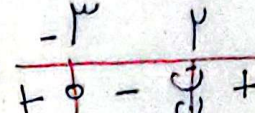
ب) $-1 \leq \sqrt{x} - 3 \leq 1 \rightarrow 2 \leq \sqrt{x} \leq 4 \rightarrow 4 \leq x \leq 16 \rightarrow D_f: [4, 16]$

الف) $-1 \leq |x| - 3 \leq 1 \rightarrow 2 \leq |x| \leq 4 \rightarrow 2 \leq x \leq 4 \text{ or } -4 \leq x \leq -2 \rightarrow D_f: [2, 4] \cup [-4, -2]$
 $-2 \geq x \geq -4$

ب) $-1 \leq x^2 + 2x + 1 \leq 1 \rightarrow x^2 + 2x + 1 \geq -1 \rightarrow (x+1)(x+2) \geq 0 \rightarrow x \leq -2 \text{ or } x \geq -1$
 $x^2 + 2x + 1 \leq 1 \rightarrow x(x+2) \leq 0 \rightarrow -2 \leq x \leq 0 \rightarrow D_f: (-\infty, -2] \cup [-1, 0]$

الف) $x^2 - 4 > 0 \rightarrow x^2 > 4 \rightarrow x > 2 \text{ or } x < -2 \rightarrow D_f: (2, +\infty) \cup (-\infty, -2)$

ب) $2 - |x| > 0 \rightarrow 2 > |x| \rightarrow 2 > x > -2 \rightarrow D_f: (-2, 2)$

الف) $\omega - x > 0 \rightarrow x < \omega$ $x - 3 \neq 1 \rightarrow x \neq 4$ $x - 2 > 0 \rightarrow x > 2 \rightarrow D_f: (2 \ \omega) - \{4\}$ ✓ ب) $x^2 - 1 > 0 \rightarrow x^2 > 1 \rightarrow x > 1 \vee x < -1$ (2) $x + 2 > 0 \rightarrow x > -2$ $x + 3 \neq 1 \rightarrow x \neq -2$ $D_f: (1 + \infty) \cup (-2 - 1) - \{-2\}$ ✓	6
الف) $\frac{x^2 - 4x + 3}{x - 2} > 0 \rightarrow$  $\rightarrow D_f: [1 + \infty) - \{2\}$ ✓ ب) $\frac{x + 2}{x - 2} > 0 \rightarrow$  $\rightarrow x + \omega > 0 \rightarrow x > -\omega$ (2) $x + \omega \neq 1 \rightarrow x \neq -2$ $D_f: (-\omega - 2) \cup (2 + \infty) - \{-2\}$ ✓	7
الف) $2 - \log_y^{x-2} \geq 0 \rightarrow 2 \geq \log_y^{x-2} \rightarrow x - 2 \leq 1 \rightarrow x \leq 3$ $x - 2 > 0 \rightarrow x > 2$ $D_f: (2 \ 3]$ ✓ ب) $2 \log_y^x - 1 \geq 0 \rightarrow \log_y^x \geq \frac{1}{2} \rightarrow x \geq \sqrt{y}$ (2) $x > 0$ $D_f: [\sqrt{y} + \infty)$ ✓	8
الف) $4^x + 1 \neq 0 \rightarrow 4^x \neq -1 \rightarrow D_f: \mathbb{R}$ ✓ ب) $4^x - 1 \neq 0 \rightarrow 4^x \neq 1 \rightarrow x \neq 0 \rightarrow D_f: \mathbb{R} - \{0\}$ ✓ ج) $4^x - 2 \neq 0 \rightarrow 4^x \neq 2 \rightarrow x \neq \frac{1}{2} \rightarrow D_f: \mathbb{R} - \{\frac{1}{2}\}$ ✓ د) $4^x \neq 2 \rightarrow x \neq \log_4 2 \rightarrow D_f: \mathbb{R} - \{\log_4 2\}$ ✓ (2)	9
الف) $4x + 1 \in \mathbb{W} \rightarrow 4x = \mathbb{W} - 1 \rightarrow x = \frac{\mathbb{W} - 1}{4} \rightarrow D_f: \{x \mid x = \frac{k-1}{4}, k \in \mathbb{W}\}$ ✓ ب) $\frac{3x-2}{2x-5} \in \mathbb{W} \rightarrow 2x-2 = 2x\mathbb{W} - 5\mathbb{W} \rightarrow 2x - 2x\mathbb{W} = 2 - 5\mathbb{W}$ (2) $x = \frac{2 - 5\mathbb{W}}{2 - 2\mathbb{W}} \rightarrow D_f: \{x \mid x = \frac{5k-2}{2k-2}, k \in \mathbb{W}\}$ ✓	10