

الف)	ب)	۱
$\sqrt{\cos x + 1} \neq 0$ $\sqrt{\cos x} \neq -1$ $\cos x \neq -\frac{1}{4}$	$\Rightarrow D_f = \mathbb{R} - \left\{ 2k\pi - \frac{\pi}{3}, 2k\pi + \frac{4\pi}{3} \right\}$	$\Rightarrow$ $\cos x - 1 \neq 0$ $\cos x \neq 1$ $D_f = \mathbb{R} - \{ 2k\pi \}$
الف)	ب)	۲
$\tan x \neq -1$ $\frac{\sin x}{\cos x} \neq -1$ $\cos x \neq 0$	$D_f = \mathbb{R} - \left\{ k\pi - \frac{\pi}{4}, k\pi - \frac{3\pi}{4} \right\}$	$\Rightarrow$ $\frac{\cos x}{\sin x} \neq 1$ $\cos x \neq \sin x$ $D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{4}, k\pi \right\}$
		۳
	$y = \arccos(\sqrt{x} - 3)$ $-1 \leq \sqrt{x} - 3 \leq 1$ $2 \leq \sqrt{x} \leq 4$ $4 \leq x \leq 16$ $D_f = [4, 16]$	
الف)	ب)	۴
$\cos y = x - 3$ $-1 \leq x - 3 \leq 1$ $2 \leq x \leq 4$ $\Rightarrow D_f = [2, 4] \cup [-4, -2]$	$\Rightarrow$ $\arcsin(x^2 + 3x + 1)$ $-1 \leq x^2 + 3x + 1 \leq 1$ $0 \leq x(x+3) \leq 2$ $\Rightarrow D_f = [0, 1] \cup [-3, -2]$	
الف)	ب)	۵
$\log_3 x^2 - 4$ $x^2 - 4 > 0$ $(x+2)(x-2) > 0$ $\Rightarrow D_f = (2, \infty) \cup (-\infty, -2)$	$\Rightarrow$ $2 - x > 0$ $ x < 2$ $-2 < x < 2$ $D_f = (-2, 2)$	

الف)

$$0 - x > 0 \Rightarrow x < 0$$

$$x - 3 > 0 \Rightarrow x > 3$$

$$x - 3 \neq 1 \Rightarrow x \neq 4$$

$$\Rightarrow D_f = (3, 0) - \{4\}$$

$$b) \quad x^2 - 1 > 0 \Rightarrow x^2 > 1 \Rightarrow \boxed{x > 1, x < -1}$$

$$x + 3 > 0 \Rightarrow \boxed{x > -3}$$

$$x + 2 \neq 1 \Rightarrow \boxed{x \neq -1}$$

$$D_f = (-3, -1) \cup (1, \infty) - \{-1\}$$

$$الف) \quad \frac{x^2 - \varepsilon x + 3}{x - 3} \cdot \frac{(x - 1)(x - 2)}{x - 2}$$

$$\begin{array}{c|c|c} x & 1 & 3 \\ \hline - & + & + \end{array}$$

$$\Rightarrow D_f = (1, \infty)$$

ب)

$$\frac{x + 3}{x - 2} > 0$$

$$x + 0 > 0$$

$$x + 0 \neq 1$$

$$x > -3, x < -3, \neq 2$$

$$\begin{array}{c} \text{D}_1 \\ \text{D}_2 \end{array}$$

$$x > -0$$

$$x \neq -\varepsilon$$

$$\Rightarrow D_f = (-0, 2) \cup (2, \infty) - \{-\varepsilon\}$$

$$\sqrt{3 - \log_2(x-1)}$$

$$x - 2 > 0$$

$$\log_2 \frac{x-2}{3} \leq 3 \Rightarrow D_f = (2, 0)$$

الف)

$$D_f = \mathbb{R}$$

ب)

$$\varepsilon^x - 1 \neq 0$$

$$\Rightarrow x \neq 0$$

$$D_f = \mathbb{R} - \{0\}$$

ج)

$$\varepsilon^x \neq 2$$

$$D_f = \mathbb{R} - \{\log_2 \varepsilon\}$$

د)

$$\varepsilon^x \neq 3$$

$$D_f = \mathbb{R} - \{\log_3 \varepsilon\}$$

الف)

$$\varepsilon x + 1 \in W_1$$

$$\varepsilon x \in W_1 - 1$$

$$x \in \frac{W_1 - 1}{\varepsilon}$$

$$D_f = \{x \mid x = \frac{k-1}{\varepsilon}, k \in W_1\}$$

ب)

$$3x - 2 = 2W_1, x - \delta W_1$$

$$\Rightarrow 3x - 2W_1, x = \frac{2 - \delta W_1}{3}$$

$$x = \frac{2 - \delta W_1}{3 - 2W_1}$$

$$D_f = \{x \mid x = \frac{2 - \delta k}{3 - 2k}, k \in W_1\}$$