

$$\textcircled{V} \text{ الف) } \frac{x^2 - 2x + 3}{x - 3} > 0 \quad \frac{(x-1)(x-2)}{x-3} > 0 \quad \begin{array}{c} 1 \\ - \quad 0 \quad + \quad 2 \\ 0 \end{array}$$

$$x - 3 \neq 0 \quad x \neq 3 \quad D_f = (1, +\infty) - \{3\}$$

$$\text{ـ) } \frac{x+3}{x-2} > 0 \quad \begin{array}{c} -3 \\ + \quad 0 \quad - \quad 2 \\ 0 \end{array} \quad \begin{array}{l} x > 2 \\ x \leq -3 \end{array}$$

$$x+3 > 0 \quad x > -3 \quad x+3 \neq 0 \quad x \neq -3$$

$$D_f = (-\infty, -3] \cup (2, +\infty) - \{-3\}$$

$$\textcircled{1} \text{ الف) } \begin{array}{l} x-2 > 0 \\ x > 2 \end{array} \quad \begin{array}{l} 3 - \log_2(x-2) \geq 0 \\ \log_2(x-2) \leq 3 \end{array}$$

$$x-2 \leq 1 \quad D_f = (2, 10]$$

$$x \leq 10$$

$$\text{ـ) } x > 0 \quad \begin{array}{l} 2 \log_3 x - 1 > 0 \\ 2 \log_3 x > 1 \end{array} \quad \begin{array}{l} \log_3 x > \frac{1}{2} \\ x > \sqrt{3} \end{array}$$

$$D_f = (\sqrt{3}, +\infty)$$

$$\textcircled{9} \text{ الف) } \begin{array}{l} f^x + 1 \neq 0 \\ f^x \neq -1 \end{array} \quad D_f = \mathbb{R}$$

$$\text{ـ) } f^x \neq 1 \quad \log_f 1 = x \quad D_f = \mathbb{R} - \{\log_f 1\}$$

$$\subseteq \mathbb{R} - \{0\}$$

$$\text{ج) } f^x \neq 2 \quad \log_f 2 \neq x \quad D_f = \mathbb{R} - \{\log_f 2\}$$

$$\text{د) } f^x \neq 3 \quad \log_f 3 \neq x \quad D_f = \mathbb{R} - \{\log_f 3\}$$

$$\textcircled{10} \text{ الف) } \begin{array}{l} fx + 1 \in \omega \\ x \in \frac{\omega-1}{f} \end{array} \quad D_f = \{x \mid x = \frac{k-1}{f}, k \in \omega\}$$

$$\text{ب) } \frac{3x-2}{2x-5} \in \omega \quad \begin{array}{l} 3x-2 \in 2\omega x - 5\omega \\ 3x-2\omega x \in -5\omega+2 \\ x(3-2\omega) \in (-5\omega+2) \end{array}$$

$$D_f = \{x \mid x = \frac{-5k+2}{2k-3}, k \in \omega\}$$

① الف) $\begin{cases} 2\cos x + 1 \neq 0 \\ \cos x \neq -\frac{1}{2} \\ \cos x \neq -\frac{1}{2} \end{cases} \rightarrow 120^\circ, 240^\circ$

$D_f = \mathbb{R} - \left\{ 2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3} \right\}$

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

② الف) $\tan x \neq -1 \rightarrow \frac{\sin}{\cos} \neq -1, \cos \neq 0 \rightarrow 90^\circ, 270^\circ, 135^\circ, 315^\circ$
 $D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{4}, k\pi - \frac{\pi}{4} \right\}$

ب) $\cot x \neq 1, \frac{\cos}{\sin} \rightarrow \sin \neq 0 \rightarrow 0, 180^\circ, 360^\circ, 0^\circ$
 $D_f = \mathbb{R} - \left\{ k\pi, k\pi + \frac{\pi}{4} \right\}$

③ الف) $\begin{cases} -1 \leq x^2 - 2 \leq 1 \\ 1 \leq x^2 \leq 3 \\ \sqrt{1} \leq x \leq \sqrt{3} \text{ و } -\sqrt{3} \leq x \leq -1 \end{cases}$

$D_f = [1, \sqrt{3}] \cup [-\sqrt{3}, -1]$

ب) $\begin{cases} -1 \leq \sqrt{x} - 3 \leq 1 \\ 2 \leq \sqrt{x} \leq 4 \\ 4 \leq x \leq 16 \end{cases}$

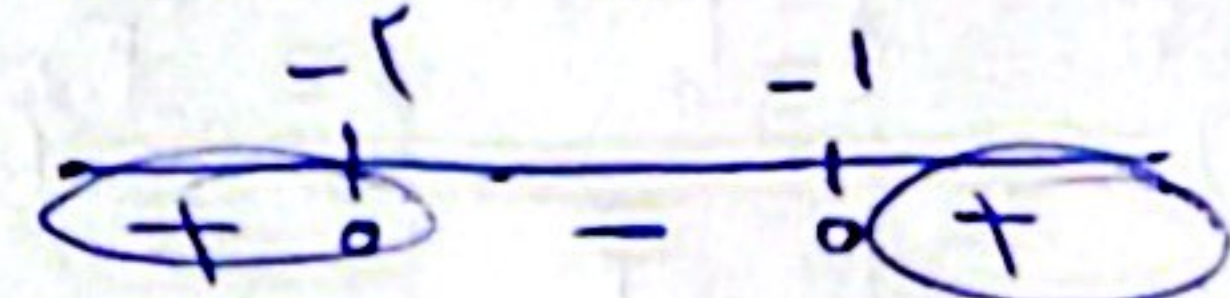
$D_f = [4, 16]$

④ الف) $\begin{cases} -1 \leq |x| - 3 \leq 1 \\ 2 \leq |x| \leq 4 \\ 2 \leq x \leq 4 \\ -4 \leq x \leq -2 \end{cases}$

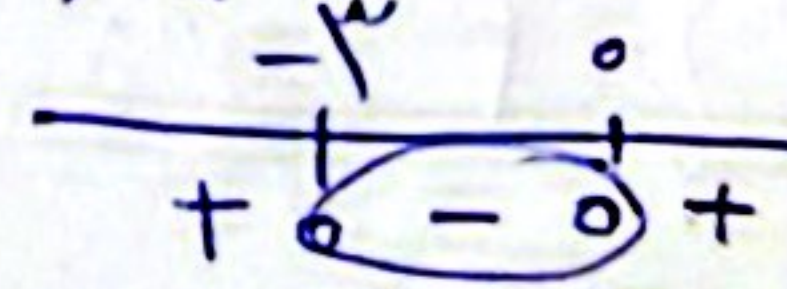
$D_f = [-4, -2] \cup [2, 4]$

ب) $-1 \leq x^2 + 3x + 1 \leq 1$

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



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



$D_f = [-3, -1] \cup [-1, 0]$

⑤ الف) $\begin{cases} x^2 - 4 > 0 \\ x^2 > 4 \\ -2 > x > 2 \end{cases}$

$D_f = (-\infty, -2) \cup (2, +\infty)$

ب) $\begin{cases} 2 - |x| > 0 \\ |x| < 2 \\ -2 < x < 2 \end{cases}$

$D_f = (-2, 2)$

⑥ الف) $0 - x > 0 \rightarrow x < 0$

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

$x - 3 > 0 \rightarrow x > 3$

$x - 4 \neq 1 \rightarrow x \neq 5$

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

$\rightarrow \frac{-1}{+} \frac{1}{-} \frac{1}{+} \rightarrow x > 1$

$D_f = (-3, -1) \cup (1, \infty) - \{-2\}$