



(۲) ✓

الف) $\frac{(x-2)(x-3)}{x-1} > 0$

1 2 3

+ - +

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

ب) $\frac{(x-1)(x-5)}{x-2} < 0$

1 2 5

+ - +

$D_f = (1, 2) \cup (5, +\infty)$

ج) $\frac{(x+3)(x+2)}{x-1} \geq 0$

-3 -2 1

+ - +

$D_f = (-\infty, -3] \cup [-2, 1) \cup [1, +\infty)$

د) $\frac{(x-4)(x-1)}{x-2} \leq 0$

1 2 4

+ - +

$D_f = [1, 2) \cup [4, +\infty)$

الف) $\frac{(x-2)(x-1)}{x-5} < 0$

1 2 5

- + -

$D_f = (-\infty, 1) \cup (2, 5)$

ب) $\frac{(x-1)(x+1)}{(x-5)(x-1)} \geq 0$

-1 1 5

+ - - +

$D_f = (-\infty, -1] \cup (1, 5) \cup (5, +\infty)$

الف) $\frac{(x-1)(x^2+1+x)}{x(x-1)(x+1)} \geq 0$

-1 0 1

+ - +

$D_f = (-\infty, -1) \cup (0, +\infty) - \{1\}$

ب) $\frac{(x+4)(x-4)}{(x-4)(x-1)} \geq 0$

-4 1 4

+ - +

$D_f = (-\infty, -4] \cup (1, +\infty) - \{4\}$

الف) ① $2-x \geq 0 \Rightarrow \boxed{x \leq 2}$

② $4-\sqrt{2-x} \geq 0 \Rightarrow 4 \geq \sqrt{2-x}$

$\Rightarrow \boxed{-14 \leq x}$

$D_f = [-14, 2]$

(۲) ✓

ب) ① $x-2 \geq 0 \Rightarrow \boxed{x \geq 2}$

② $2-\sqrt{x-2} \geq 0 \Rightarrow 2 \geq \sqrt{x-2}$

$\Rightarrow 4 \geq x-2 \Rightarrow \boxed{6 \geq x}$

$D_f = [2, 6]$

الف) $4 - 2x^2 \geq 0$ $2 \geq x^2$ $\sqrt{2} \geq x \rightarrow -\sqrt{2} \leq x \leq \sqrt{2}$ $D_f = [-\sqrt{2}, \sqrt{2}]$ (د) ✓	ب) $3 x - 9 \geq 0$ $ x \geq 3 \rightarrow \begin{cases} x \geq 3 \\ x \leq -3 \end{cases}$ $D_f = [3, +\infty) \cup (-\infty, -3]$	٦
الف) $ x - 3 \neq 0 \rightarrow x \neq \pm 3$ $D_f = \mathbb{R} - \{\pm 3\}$ (د)	ب) $\sqrt{x} - 3 \neq 0 \rightarrow \sqrt{x} \neq 3$ $x \neq 9$ $D_f = \mathbb{R} - \{9\}$ (د)	٧
الف) $\cos x \neq \frac{1}{3} = \cos \frac{\pi}{3}$ $\rightarrow \frac{\omega \pi}{3}$ $D_f = \mathbb{R} - \{2k\pi \pm \frac{\pi}{3}\}$ (د)	ج) ١) $\cos x \neq 1$ ٢) $\cos x \neq 0$ $D_f = \mathbb{R} - \{k\pi + \frac{\pi}{2}, k\pi + \frac{\pi}{2}\}$ (د)	٨
الف) $2 x-2 - \frac{1}{x} > 0 \rightarrow x-2 > \frac{1}{x}$ $\rightarrow \begin{cases} x-2 > \frac{1}{x} \rightarrow x > \frac{9}{x} \\ x-2 < -\frac{1}{x} \rightarrow x < \frac{5}{x} \end{cases}$ $D_f = (\frac{5}{x}, \frac{9}{x})$ (د)	ب) $\sin x \neq -\frac{1}{3}$ $D_f = \mathbb{R} - \{2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6}\}$ (د)	٩
الف) $4 - 2 x \geq 0 \rightarrow 2 \geq x $ $\rightarrow -2 \leq x \leq 2$ $D_f = [-2, 2]$ (د) ✓	ب) $ x \neq 0$ $x \neq 0$ $D_f = \mathbb{R} - \{0\}$	١٠