

الف)	ب)	ج)	د)	۱
الف) $(x-2)(x-3) > 0 \rightarrow$	ب) $(x-1)(x-5) < 0 \rightarrow$	ج) $(x+1)(x+5) \geq 0 \rightarrow$	د) $(x-1)(x-2) \leq 0 \rightarrow$	۲
$\frac{x-2}{x-3} > 0 \rightarrow$	$\frac{x-1}{x-5} < 0 \rightarrow$	$\frac{x+1}{x+5} \geq 0 \rightarrow$	$\frac{x-1}{x-2} \leq 0 \rightarrow$	
$D_f = (-\infty, 2) \cup (3, +\infty)$	$D_f = (1, 5)$	$D_f = (-\infty, -5] \cup [-1, +\infty)$	$D_f = [1, 2]$	
الف) $\frac{(x-1)(x-2)}{x-5} < 0 \rightarrow$	ب) $\frac{(x-1)(x+1)}{(x-1)(x-5)} \geq 0 \rightarrow$	ج) $\frac{x^3-1}{x^3-x} \geq 0 \rightarrow$	د) $\frac{(x-4)(x+4)}{(x-1)(x-4)} \geq 0 \rightarrow$	۳
$\frac{x-1}{x-5} < 0 \rightarrow$	$\frac{x+1}{x-5} \geq 0 \rightarrow$	$\frac{x^2-1}{x^2-x} \geq 0 \rightarrow$	$\frac{x+4}{x-1} \geq 0 \rightarrow$	
$D_f = (-\infty, 1) \cup (2, 5)$	$D_f = (-\infty, -1] \cup (5, +\infty)$	$D_f = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$	$D_f = (-\infty, -4] \cup (1, 4) \cup (4, +\infty)$	
الف) $\begin{cases} 2-x \geq 0 \rightarrow 2 \geq x \rightarrow x \leq 2 \\ 4-\sqrt{2-x} \geq 0 \rightarrow \sqrt{2-x} \leq 4 \rightarrow 2-x \leq 16 \rightarrow x \geq -14 \end{cases}$	ب) $\begin{cases} x-2 \geq 0 \rightarrow x \geq 2 \\ 3-\sqrt{x-2} \geq 0 \rightarrow \sqrt{x-2} \leq 3 \rightarrow x-2 \leq 9 \rightarrow x \leq 11 \end{cases}$	ج) $\begin{cases} x-2 \geq 0 \rightarrow x \geq 2 \\ 3-\sqrt{x-2} \geq 0 \rightarrow \sqrt{x-2} \leq 3 \rightarrow x-2 \leq 9 \rightarrow x \leq 11 \end{cases}$	د) $\begin{cases} x-2 \geq 0 \rightarrow x \geq 2 \\ 3-\sqrt{x-2} \geq 0 \rightarrow \sqrt{x-2} \leq 3 \rightarrow x-2 \leq 9 \rightarrow x \leq 11 \end{cases}$	۵
$D_f = [-14, 2]$	$D_f = [2, 11]$	$D_f = [2, 11]$	$D_f = [2, 11]$	

الف) $4 - 2x^2 \geq 0 \rightarrow 2 - x^2 \geq 0 \rightarrow 2 \geq x^2 \rightarrow x^2 \leq 2 \rightarrow x \leq \sqrt{2}$ $\rightarrow -\sqrt{2} \leq x \leq \sqrt{2} \rightarrow D_f = [-\sqrt{2}, \sqrt{2}]$ ب) $3 x - 9 \geq 0 \rightarrow x - 3 \geq 0 \rightarrow x \geq 3 \rightarrow x \geq 3 \text{ و } x \leq -3$ $\rightarrow D_f = (-\infty, -3] \cup [3, +\infty)$	٤
الف) $x - 3 \neq 0 \rightarrow x \neq 3 \rightarrow D_f = (-\infty, 3) \cup (-3, 3) \cup (3, +\infty)$ ب) $\begin{cases} \sqrt{x} \rightarrow x \geq 0 \\ \sqrt{x} - 3 \neq 0 \rightarrow \sqrt{x} \neq 3 \rightarrow x \neq 9 \end{cases}$ $\rightarrow D_f = [0, 9) \cup (9, +\infty)$	٧
الف) $2\cos x - 1 \neq 0 \rightarrow 2\cos x \neq 1 \rightarrow \cos x \neq \frac{1}{2} \rightarrow D_f = \mathbb{R} - \left\{ 2k\pi \pm \frac{\pi}{3}, k \in \mathbb{Z} \right\}$ ب) $2\sin x + 1 \neq 0 \rightarrow 2\sin x \neq -1 \rightarrow \sin x \neq -\frac{1}{2} \rightarrow D_f = \mathbb{R} - \left\{ 2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6} \right\}$ ج) $\cot x - 1 \neq 0 \rightarrow \cot x \neq 1 \rightarrow x \neq k\pi + \frac{\pi}{4}$ $\sin x \neq 0 \rightarrow x \neq k\pi$ $\cos x \neq 0 \rightarrow x \neq k\pi + \frac{\pi}{2}$ $\rightarrow D_f = \mathbb{R} - \left\{ k\pi, k\pi + \frac{\pi}{4}, k\pi + \frac{\pi}{2} \right\}$	
د) $2\sin^2 x - 3 \neq 0 \rightarrow \sin^2 x \neq \frac{3}{2} \rightarrow \sin x \neq \pm \frac{\sqrt{3}}{2} \rightarrow D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{3}, k\pi + \frac{2\pi}{3} \right\}$	
$2 x-2 - \frac{1}{x} > 0 \rightarrow x-2 > \frac{1}{x}$ $\begin{cases} x-2 > \frac{1}{x} \rightarrow x > \frac{1}{x-2} \\ x-2 < -\frac{1}{x} \rightarrow x < \frac{1}{x-2} \end{cases} \quad D_f = (-\infty, \frac{1}{x-2}) \cup (\frac{1}{x-2}, +\infty)$	٩
الف) $4 - 2 x \geq 0 \rightarrow x \leq 2 \rightarrow D_f = [-2, 2]$ ب) $x \neq 0 \rightarrow x \neq 0 \rightarrow D_f = (-\infty, 0) \cup (0, +\infty)$	١٠