

الف)	ب)	ج)	د)	1
الف) $x^2 - 4x + 4 > 0$ $(x-2)(x-2) > 0$ $D_f: (-\infty, 2) \cup (2, +\infty)$ 	ب) $x^2 - 4x + 5 < 0$ $(x-1)(x-5) < 0$ $D_f: (1, 5)$ 	ج) $x^2 + 7x + 5 > 0$ $(x+1)(x+5) > 0$ $D_f: (-\infty, -5) \cup (-1, +\infty)$ 	د) $x^2 - 7x + 4 < 0$ $(x-4)(x-1) < 0$ $D_f: (1, 4)$ 	2
الف) $\frac{x^2 - 3x + 2}{x-4} > 0$ $(x-2)(x-1) > 0$ $D_f: [-1, 2] \cup (4, +\infty)$ 	ب) $\frac{x^2 - 1}{x^2 + 4x + 5} > 0$ $\frac{x^2 - 1}{x^2 + 4x + 5} > 0$ $D_f: (-\infty, -1] \cup (5, +\infty)$ 	3		
الف) $y = \sqrt{\frac{x^2 - 1}{x^2 - 2}}$ $\frac{x^2 - 1}{x^2 - 2} > 0 \Rightarrow \frac{(x-1)(x+1)}{x(x-2)(x+1)} > 0$ $D_f: (-\infty, -1) \cup (0, +\infty) - \{1\}$ 	ب) $y = \sqrt{\frac{x^2 - 1}{x^2 - 5x + 6}}$ $\frac{x^2 - 1}{x^2 - 5x + 6} > 0$ $D_f: (-\infty, -1] \cup (2, 4) \cup (6, +\infty)$ 	4		
الف) $y = \sqrt{x - \sqrt{x-2}}$ $\begin{cases} x - 2 \geq 0 \rightarrow x \geq 2 \\ x - \sqrt{x-2} \geq 0 \rightarrow \sqrt{x-2} \leq x - 2 \rightarrow x - 2 \leq 14 \rightarrow -2 \leq x \leq 16 \end{cases}$ $D_f: [2, 16]$ 	ب) $y = \sqrt{x - \sqrt{x-2}}$ $\begin{cases} x - 2 \geq 0 \rightarrow x \geq 2 \\ x - \sqrt{x-2} \geq 0 \rightarrow \sqrt{x-2} \leq x - 2 \rightarrow x - 2 \leq 14 \rightarrow -2 \leq x \leq 16 \end{cases}$ $D_f: [2, 16]$ 	5		

الف) $y = \sqrt{2-x^2}$ $2-x^2 \geq 0 \rightarrow x^2 \leq 2 \rightarrow x \leq \sqrt{2}$ $-\sqrt{2} \leq x \leq \sqrt{2}$ $D_f = (-\infty, -\sqrt{2}] \cup [\sqrt{2}, \infty)$	ب) $y = \sqrt{2 x -9}$ $2 x -9 \geq 0 \rightarrow 2 x \geq 9 \rightarrow x \geq \frac{9}{2}$ $\rightarrow x \leq -\frac{9}{2} \text{ or } x \geq \frac{9}{2}$ $D_f = [-\frac{9}{2}, \frac{9}{2}]$	6
ج) $y = \sqrt{\frac{ x +1}{ x -3}}$ $x -3 \neq 0 \rightarrow x \neq 3 \rightarrow x \neq \pm 3$ $D_f = \mathbb{R} - \{\pm 3\}$	د) $y = \sqrt{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$ $\sqrt{x}-3 \neq 0 \rightarrow \sqrt{x} \neq 3 \rightarrow x \neq 9$ $D_f = \mathbb{R} - \{9\}$	7
هـ) $y = \frac{\sin x}{r \cos x - 1}$ $r \cos x - 1 \neq 0$ $r \cos x \neq 1$ $\cos x \neq \frac{1}{r}$ $D_f = \mathbb{R} - \{x x = 2k\pi \pm \frac{\arccos(1/r)}{r}\}$	و) $y = \frac{\cos x}{r \sin x + 1}$ $r \sin x + 1 \neq 0$ $\sin x \neq -\frac{1}{r}$ $D_f = \{x x = 2k\pi \pm \frac{\arcsin(-1/r)}{r}\}$	8
ز) $y = \frac{\tan x}{\cot x - 1}$ $\cot x \neq 1$ $\tan x \neq 1$ $\sin x \neq \frac{1}{\sqrt{2}}$ $\cos x \neq 0$ $D_f = \mathbb{R} - \{x x = 2k\pi \pm \frac{\pi}{4}\}$		
ح) $y = \frac{1}{\sqrt{2 x-2 - \frac{1}{2}}}$ $2 x-2 - \frac{1}{2} > 0 \rightarrow 2 x-2 > \frac{1}{2} \rightarrow x-2 > \frac{1}{4}$ $\Rightarrow \begin{cases} x-2 > \frac{1}{4} \rightarrow x > 2\frac{1}{4} \\ x-2 < -\frac{1}{4} \rightarrow x < 2\frac{1}{4} \end{cases}$ $D_f = (\frac{9}{4}, \infty) \cup (-\infty, \frac{7}{4})$		
ط) $y = \sqrt{2- x }$ $2- x \geq 0 \rightarrow x \leq 2$ $-2 \leq x \leq 2$ $D_f = [-2, 2]$	ي) $y = \sqrt{\frac{ x }{ x }}$ $x \neq 0$ $D_f = \mathbb{R}^+ \subseteq \mathbb{R} - \{0\}$	10