

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

الف) $\sqrt{4-5x-x^2}$	$4-5x-x^2 \geq 0 \rightarrow 2x^2 \leq 4 \rightarrow x^2 \leq 2$ $-\sqrt{2} \leq x \leq \sqrt{2}$ $D_f = [-\sqrt{2}, \sqrt{2}]$	
ب) $\sqrt{2 x -9}$	$2 x -9 \geq 0 \rightarrow 2 x \geq 9 \rightarrow x \geq \frac{9}{2} \rightarrow x \leq -\frac{9}{2}$ $x \geq \frac{9}{2}$ $D_f = (-\infty, -\frac{9}{2}] \cup [\frac{9}{2}, +\infty)$	6
الف) $y = \sqrt{\frac{ x +1}{ x -3}}$	$ x -3 \neq 0 \rightarrow x \neq 3 \rightarrow x \neq \pm 3$ $D_f = \mathbb{R} - \{-3, 3\}$	
ب) $y = \sqrt{\frac{\sqrt{x}+1}{\sqrt{x}-3}}$	$x \geq 0$ $\sqrt{x}-3 \neq 0 \rightarrow \sqrt{x} \neq 3 \rightarrow x \neq 9$ $D_f = [0, 9) \cup (9, +\infty)$	7
الف) $y = \frac{\sin x}{2\cos x - 1}$	$2\cos x - 1 \neq 0 \rightarrow \cos x \neq \frac{1}{2}$ $D_f = \mathbb{R} - \{2k\pi \pm \frac{\pi}{3}\}$	
ب) $y = \frac{\cos x + 1}{\sin x + 1}$	$\sin x + 1 \neq 0 \rightarrow \sin x \neq -1$ $D_f = \mathbb{R} - \{x \in \mathbb{R} : x = \frac{3\pi}{2} + 2k\pi\}$	8
ج) $y = \frac{\tan x + 2}{\cot x - 1}$	$\cot x - 1 \neq 0 \rightarrow \cot x \neq 1 \rightarrow \frac{\cos x}{\sin x} \neq 1$ $D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{4}\}$	
د) $y = \frac{\sin x + 1}{\sin^2 x - 3}$	$\sin^2 x - 3 \neq 0 \rightarrow \sin^2 x \neq 3$ $D_f = \mathbb{R}$	
$y = \frac{1}{\sqrt{ x-2 } - \frac{1}{4}}$	$2 x-2 - \frac{1}{4} > 0 \rightarrow 2 x-2 > \frac{1}{4} \rightarrow x-2 > \frac{1}{8}$ $x-2 > \frac{1}{8} \rightarrow x > \frac{17}{8}$ $x-2 < -\frac{1}{8} \rightarrow x < \frac{15}{8}$ $D_f = (-\infty, \frac{15}{8}) \cup (\frac{17}{8}, +\infty)$	9
الف) $y = \sqrt{4-5 x }$	$4-5 x \geq 0 \rightarrow 5 x \leq 4 \rightarrow x \leq \frac{4}{5}$ $- \frac{4}{5} \leq x \leq \frac{4}{5}$ $D_f = [-\frac{4}{5}, \frac{4}{5}]$	
ب) $y = \sqrt{\frac{ x }{ x }}$	$ x \geq 0 \rightarrow x \neq 0$ $D_f = (-\infty, 0) \cup (0, +\infty)$	10