

الف) $x^2 - 5x + 6 > 0$ $(x-3)(x-2) > 0$ $x=3, x=2$ $D_f = \mathbb{R} - \{2, 3\}$	ب) $x^2 - 6x + 5 < 0$ $(x-1)(x-5) < 0$ $x=1, x=5$ $D_f = (1, 5)$	ج) $x^2 + 4x + 5 > 0$ $(x+1)(x+5) > 0$ $x=-1, x=-5$ $D_f = (-\infty, -5] \cup [-1, +\infty)$	د) $(x-1)(x-4) < 0$ $x=1, x=4$ $D_f = [1, 4]$	1
الف) $\frac{(x-1)(x-2)}{x-5} < 0$ $D_f = (-\infty, 1) \cup (2, 5)$	ب) $\frac{(x-1)(x+1)}{(x-1)(x-5)} \geq 0$ $D_f = (-\infty, -1] \cup (5, +\infty)$	2		
الف) $\frac{x^3-1}{x^3-x} \geq 0$ $\frac{(x-1)(x^2+x+1)}{x(x-1)(x+1)} \geq 0$ $\frac{x^2+x+1}{x(x+1)} \geq 0$ $D_f = (-\infty, -1] \cup (0, +\infty)$	ب) $\frac{(x-4)(x+4)}{(x-1)(x-1)} \geq 0$ $D_f = (-\infty, -4] \cup [1, 4] \cup (4, +\infty)$	3		
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$D_f = [2, 11]$

ا) $\varepsilon - 2x^2 \geq 0$ $2x^2 \leq \varepsilon$ $x^2 \leq \frac{\varepsilon}{2}$ $-\sqrt{\frac{\varepsilon}{2}} \leq x \leq \sqrt{\frac{\varepsilon}{2}}$ $D_f = [-\sqrt{\frac{\varepsilon}{2}}, +\sqrt{\frac{\varepsilon}{2}}]$	ب) $3 x - 9 \geq 0$ $3 x \geq 9$ $x \geq 3$ $x \geq 3, x \leq -3$ $D_f = (-\infty, -3] \cup [3, +\infty)$	6
ج) $\sqrt{2x} - 3 \neq 0$ $\sqrt{2x} \neq 3$ $2x \neq 9$ $x \neq \frac{9}{2}$ $D_f = \mathbb{R} - \{\frac{9}{2}\}$	د) $x - 3 \neq 0$ $x \neq 3$ $x \neq \pm 3$ $D_f = \mathbb{R} - \{-3, +3\}$	7
ا) $2\cos x - 1 \neq 0 \rightarrow \cos x \neq \frac{1}{2} \rightarrow D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{3}, 2k\pi + \frac{5\pi}{3}\}$ ب) $2\sin x + 1 \neq 0 \rightarrow \sin x \neq -\frac{1}{2} \rightarrow D_f = \mathbb{R} - \{2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6}\}$ ج) $\cot x - 1 \neq 0 \rightarrow \cot x \neq 1$ $\sin x \neq 0$ $\csc x \neq 0 \rightarrow x \neq k\pi$ $D_f = \mathbb{R} - \{k\pi\}$	د) $\varepsilon \sin^2 x - 3 \neq 0 \rightarrow \sin^2 x \neq \frac{3}{\varepsilon} \rightarrow \sin x \neq \pm \frac{\sqrt{3}}{\varepsilon} \rightarrow D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6}, 2k\pi + \frac{7\pi}{6}, 2k\pi + \frac{11\pi}{6}\}$	8
$2 \times x - 2 - \frac{1}{\varepsilon} > 0$ $2 x - 2 \geq \frac{1}{\varepsilon}$ $x - 2 \geq \frac{1}{2\varepsilon}$ $x - 2 > \frac{1}{2\varepsilon} \rightarrow x > \frac{1}{2\varepsilon} + 2 \rightarrow x > \frac{4\varepsilon + 1}{2\varepsilon}$ $x - 2 < -\frac{1}{2\varepsilon} \rightarrow x < -\frac{1}{2\varepsilon} + 2 \rightarrow x < \frac{4\varepsilon - 1}{2\varepsilon}$	$D_f = (-\infty, \frac{4\varepsilon - 1}{2\varepsilon}) \cup (\frac{4\varepsilon + 1}{2\varepsilon}, +\infty)$	9
ا) $\varepsilon - 2 x \geq 0$ $2 x \leq \varepsilon$ $x \leq \frac{\varepsilon}{2}$ $-\frac{\varepsilon}{2} \leq x \leq \frac{\varepsilon}{2}$ $D_f = [-\frac{\varepsilon}{2}, \frac{\varepsilon}{2}]$	ب) $\sqrt{\frac{ x }{ x }}$ $x \neq 0 \rightarrow x \neq 0$ $\frac{ x }{ x } \geq 0$ $D_f = \mathbb{R} - \{0\}$	10

$$D_f = \mathbb{R} - \{0\}$$