

الف) $1-x \geq 0$ $x \leq 1$ $D_f = \textcircled{1,2} [-1, 2]$ ✓ ب) $1-x \geq 0$ $x \leq 1$ $D_f = \textcircled{1,2} [2, 11]$ ✓	۱
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الف) $1-2x^2 \geq 0$ $1 \geq 2x^2 \Rightarrow x^2 \leq \frac{1}{2} \Rightarrow x \leq \sqrt{\frac{1}{2}}$ $D_f = [-\sqrt{\frac{1}{2}}, \sqrt{\frac{1}{2}}]$ $D_f = (-\infty, \sqrt{\frac{1}{2}}]$	ب) $3 x -9 \geq 0$ $3 x \geq 9$ $x \geq 3$ $x \geq 3$ $x \leq -3$ ۲
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الف) $x -2=0$ $x =2 \Rightarrow x = \pm 2$ $D_f = \mathbb{R} - \{\pm 2\}$ ✓	ب) $x \geq 0$ $\sqrt{x}-2=0$ $\sqrt{x}=2$ $x=4$ $D_f = [0, +\infty) - \{4\}$ ✓ ۳
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الف) $1- x \geq 0$ $x \leq 1$ $-1 \leq x \leq 1$ $D_f = [-1, 1]$ ✓	ب) $1-x^2 \geq 0$ $x^2 \leq 1$ $x \leq 1$ $x -1=0$ $x =1 \Rightarrow x = \pm 1$ $D_f = (-\infty, 1] - \{\pm 1\}$ $D_f = [-1, 1] - \{\pm 1\}$ ۴
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الف) $x+ x \geq 0$ $x \geq 0$ $D_f = [0, +\infty)$ $D_f = \mathbb{R}$	ب) $x x \geq 0$ $x \geq 0$ $D_f = (0, +\infty)$ ✓ ۵
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ا) $r - [x] \geq 0$ $[x] \leq r$ $x < r$ $D_f = (-\infty, r)$	ب) $r - [x] > 0$ $[x] < r$ $x < r$ $D_f = (-\infty, r)$	6
ا) $x[x] = 0$ $\Rightarrow x = 0$ $D_f = \mathbb{R} - \{0\}$ $D_g = \mathbb{R} - [0, 1)$	ب) $-x[x] > 0$ $+ \frac{0}{0}$ $D_f = \{ \}$	7
ا) $[x - \frac{1}{r}] + [x + \frac{1}{r}] \geq 0$ $[x + \frac{1}{r} - 1] + [x + \frac{1}{r}] \geq 0$ $[x + \frac{1}{r}] - 1 + [x + \frac{1}{r}] \geq 0$ $2[x + \frac{1}{r}] \geq 1 \Rightarrow [x + \frac{1}{r}] \geq \frac{1}{2} \Rightarrow x + \frac{1}{r} \geq \frac{1}{2} \Rightarrow x \geq \frac{1}{2} - \frac{1}{r}$ $D_f = [\frac{1}{2} - \frac{1}{r}, +\infty)$	ب) $[x - \frac{1}{r}] + [x + \frac{1}{r}] \geq 0$ $[x - \frac{1}{r}] + [x - (x - \frac{1}{r})] \geq 0$ $\Rightarrow x - \frac{1}{r} \in \mathbb{Z}$ $\Rightarrow D_f = \{x \mid x = k + \frac{1}{r}, k \in \mathbb{Z}\}$	8
ا) $r \sin^2 x - 1 = 0$ $r \sin^2 x = 1$ $\sin^2 x = \frac{1}{r}$ $\Rightarrow \sin x = \pm \frac{1}{\sqrt{r}}$ $\Rightarrow \sin x = \pm \frac{1}{\sqrt{r}} \Rightarrow x: \frac{\pi}{2}, \frac{3\pi}{2}, \frac{5\pi}{2}, \frac{7\pi}{2}, \dots$	ب) $\frac{\sin x}{\cos x} + 1 = 0 \Rightarrow \frac{\sin x}{\cos x} = -1$ $\sin x = -\cos x$ $x: \frac{3\pi}{4}, \frac{5\pi}{4}$ $D_f = \{ \frac{3\pi}{4} + k\pi, \frac{5\pi}{4} + k\pi \}$ $D_g = \{ k\pi - \frac{\pi}{4} \}$ $\tan x \neq -1$ $\tan x \neq \cot x$	9
ا) $r \sin x \geq 1$ $\sin x \geq \frac{1}{r}$ $\Rightarrow D_f = [\frac{\pi}{6}, \frac{5\pi}{6}]$	ب) $1 - r \cos x \geq 0$ $r \cos x \leq 1 \Rightarrow \cos x \leq \frac{1}{r}$ $\cos x \leq \frac{1}{r}$ $-1 \leq \cos x \leq 1$ $D_f = \mathbb{R}$ $D_g = [\frac{\pi}{3}, \frac{2\pi}{3}] \cup [\frac{4\pi}{3}, \frac{5\pi}{3}]$	10