

الف) $y = \sqrt{r \sin x - 1}$ $\sin x \geq \frac{1}{r}$ $D_f = \mathbb{R} \setminus \left[\frac{\pi}{4} + 2k\pi, \frac{5\pi}{4} + 2k\pi \right]$	ب) $y = \sqrt{\cos x - 1}$ $\cos x \neq 1$ $D_f = \mathbb{R} - \{2k\pi\}$	٦
الف) $\cos y = x - 3$ $-1 \leq x - 3 \leq 1$ $2 \leq x \leq 4$ $D_f = [-4, -2] \cup [2, 4]$	ب) $y = \arcsin(x^2 + 3x + 1)$ $-1 \leq x^2 + 3x + 1 \leq 1$ $0 \leq x^2 + 3x \leq 2$ $D = [-3, -2] \cup [-1, 0]$	٧
الف) $y = \sqrt{2 - \log_4(x-2)}$ $x > 2$ $\log_4(x-2) \leq 2$ $x-2 \leq 9$ $2 < x \leq 11$ $D_f = (2, 11]$	ب) $y = \log(x^3 - x)$ $x(x^2 - 1)$ $x(x-1)(x+1) > 0$ $\frac{-1 \quad 0 \quad 1}{-+ -+}$ $\frac{-1 \quad 0 \quad 0 \quad 1}{\text{صفر عند}}$ $\Rightarrow D_f = (-1, 0) \cup (1, +\infty)$	٨
الف) $D_f = \mathbb{R}$ ب) $D_f = \mathbb{R} - \{0\} \rightarrow r^x \neq 1 \rightarrow x \neq 0$ ج) $r^x \neq r \rightarrow x \neq \log_r r \Rightarrow D_f = \mathbb{R} - \{\log_r r\}$ د) $r^x \neq r^2 \rightarrow x \neq \log_r r^2 \Rightarrow D_f = \mathbb{R} - \{\log_r r^2\}$		٩
الف) $y = (x+1)!$ $x+1 \in \mathbb{N}$ $x \in \mathbb{N} + 1 \rightarrow x \in \frac{\mathbb{N}+1}{\epsilon}$ $D_f = \left\{ x \mid x = k + \frac{1}{\epsilon}, k \in \mathbb{N} \right\}$	ب) $\left(\frac{x^2 - r}{r^2 x - a} \right)! \in \mathbb{N}$ $-\frac{aW - r}{r^2 W - r^3} \rightarrow \frac{aW - r}{r^3 - r^2 W}$ $D_f = \left\{ x \mid x = \frac{aK - r}{r^3 - r^2 K}, K \in \mathbb{N} \right\}$	١٠

الف) $2^x - 4x \geq 0$ $x(x-4) \geq 0$ $x=0$ $D_f = (-1, 1) \cup [4, +\infty)$ $x=4$ $2^x - x \neq 0$ $x(x^2-1) \neq 0$ $x(x-1)(x+1) \neq 0$ $x \neq 0, 1, -1$	ب) $\sqrt{\frac{x^3(x-1)(x+1)}{x(x-1)(x+1)}}$ $\Rightarrow D_f = \mathbb{R} - \{-1, 0, 1\}$	۱
الف) $\frac{x+1}{\sqrt{x+ x }} \rightarrow D_f = \mathbb{N}$ ب) $D_f = (0, +\infty)$	ب) $x /x > 0$ $D_f = (0, +\infty)$	۲
الف) $y = \sqrt{2-[x]}$ $2-[x] \geq 0$ $[x] \leq 2$ $x < 3$ $D_f = (-\infty, 3)$	ب) $y = \frac{1}{\sqrt{2-[x]}}$ $2-[x] \neq 0$ $2-[x] > 0$ $[x] < 2 \rightarrow x < 2$ $D_f = (-\infty, 2)$	۳
الف) $y = \sqrt{[x - \frac{1}{p}] + [x + \frac{r}{p}]}$ $[x + \frac{r}{p}] \geq [x - \frac{1}{p}] + 1$ $2[x - \frac{1}{p}] + 1 \geq 0$ $2[x - \frac{1}{p}] \geq -1$ $[x - \frac{1}{p}] \geq -\frac{1}{2}$ $D_f = [\frac{1}{p}, +\infty)$	ب) $y = \sqrt{[x - \frac{1}{p}] + [-x + \frac{1}{p}]}$ $x - \frac{1}{p} \approx t$ $[t] + [-t] \rightarrow \begin{cases} 0 & t \in \mathbb{Z} \\ -1 & t \notin \mathbb{Z} \end{cases}$ $D_f = \{\frac{1}{p} + k \mid k \in \mathbb{Z}\}$	۴
الف) $y = \frac{r}{\sin x - 1}$ $\sin x \neq 1$ $D_f = \{\mathbb{R} - 2k\pi + \frac{\pi}{2} \mid k \in \mathbb{Z}\}$	ب) $y = \frac{r}{r \sin^2 x - 1}$ $r \sin^2 x \neq 1$ $\sin^2 x \neq \frac{1}{r}$ $\sin x \neq \pm \sqrt{\frac{1}{r}}$ $D_f = \mathbb{R} - \{\frac{\pi}{r} + \frac{k\pi}{r} \mid k \in \mathbb{Z}\}$	