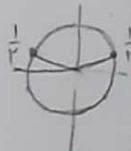


الف) $y = \sqrt{x^2 - 9}$ $\frac{x^2 - 9}{x^2 - 9} \geq 0$ $x(x-3)(x+3) \geq 0$ $x(x-1)(x+1) \geq 0$ $D_f = (-1, 0) \cup (0, 1) \cup (3, +\infty)$	ب) $y = \sqrt{x^2 - 9}$ $\frac{x^2 - 9}{x^2 - 9} \geq 0$ $x(x-3)(x+3) \geq 0$ $x(x-1)(x+1) \geq 0$ $D_f = (-1, 0) \cup (0, 1) \cup (3, +\infty)$	۱
الف) $y = \frac{x+1}{\sqrt{x+1}}$ $x+1 \geq 0$ $ x \geq -x$ $D_f = (0, +\infty)$	ب) $y = \frac{1}{\sqrt{x+1}}$ $x+1 \geq 0$ $D_f = (0, +\infty)$	۲
الف) $y = \sqrt{2-x}$ $2-x \geq 0$ $[x] \leq 2$ $D_f = (-\infty, 2)$	ب) $y = \frac{1}{\sqrt{2-x}}$ $2-x \geq 0$ $[x] \leq 2$ $D_f = (-\infty, 2)$	۳
الف) $y = \sqrt{[x - \frac{1}{p}] + [x + \frac{2}{p}]}$ $[x - \frac{1}{p}] + [x + \frac{2}{p}] \geq 0$ $[x + \frac{2}{p} - 1] + [x + \frac{2}{p}] \geq 0$ $2[x + \frac{2}{p}] - 1 \geq 0$ $2(x + \frac{2}{p}) \geq 1$ $[x + \frac{2}{p}] \geq \frac{1}{2}$ $x + \frac{2}{p} \geq \frac{1}{2}$ $x \geq \frac{1}{p}$ $D_f = [\frac{1}{p}, +\infty)$	ب) $y = \sqrt{[x - \frac{1}{p}] + [-x + \frac{1}{p}]}$ $[x - \frac{1}{p}] + [-x + \frac{1}{p}] \geq 0$ $[x - \frac{1}{p}] + [-(x - \frac{1}{p})] \geq 0$ $x \in \mathbb{Z} \rightarrow [x] + [-x] = 0$ $x \notin \mathbb{Z} \rightarrow [x] + [-x] = -1$ $D_f = \{x \mid x = k + \frac{1}{p}, k \in \mathbb{Z}\}$	۴
الف) $y = \frac{r}{\sin x - 1}$ $\sin x - 1 \neq 0$ $\sin x \neq 1$ $R = \{2k\pi + \frac{\pi}{2}\}$	ب) $y = \frac{r}{r \sin x - 1}$ $r \sin x - 1 \neq 0$ $\sin x \neq \frac{1}{r}$ $\sin x \neq \pm \frac{\sqrt{r}}{r}$ $R = \{\frac{k\pi}{r} + \frac{\pi}{r}\}$	۵

الف) $y = \sqrt{r \sin n - 1} \quad r \sin n - 1 \geq 0$ $\sin n \geq \frac{1}{r}$ $2k\pi + \frac{\pi}{r} \leq n \leq 2k\pi + \frac{5\pi}{r}$ $[2k\pi + \frac{\pi}{r}, 2k\pi + \frac{5\pi}{r}]$ 	ب) $y = \sqrt{\cos n - 1} \quad \cos n - 1 \geq 0$ $\cos n \geq 1$ $\{2k\pi\}$		
الف) $\cos y = n - r \quad -1 \leq \cos y \leq 1$ $-1 \leq n - r \leq 1 \quad n - r \geq -1 \quad n \geq r$ $n - r \leq 1 \quad n \leq r + 1 \quad r \leq n \leq r + 1$ $D_f = [-r-1, -r] \cup [r, r+1]$	ب) $y = \arcsin(n^2 + 3n + 1)$ $-1 \leq n^2 + 3n + 1 \leq 1 \quad n^2 + 3n + 1 \leq 1$ $n^2 + 3n \leq 0 \quad n(n+3) \leq 0 \quad \frac{-3}{-1} \leq n \leq \frac{0}{0}$ $-3 \leq n \leq 0 \quad n^2 + 3n + 1 \geq 1 \quad (n+1)(n+2) \geq 0$ $n \leq -2 \cup n \geq -1 \quad [-3, 0] \cap [-2, -1] = [-3, -1]$ $[-3, 0] \cap [-1, 0] = [-1, 0]$ $D_f = [-3, -1] \cup [-1, 0]$		
الف) $y = \sqrt{r - \log_r(n-2)} \quad n-2 > 0$ $r - \log_r(n-2) \geq 0 \quad \log_r(n-2) \leq r$ $n-2 \leq r^r \quad n-2 \leq 9 \quad n \leq 11 \quad r < n \leq 11$ $D_f = (2, 11]$	ب) $y = \log(n^2 - n) \quad n^2 - n > 0$ $n(n-1) > 0 \quad n(n-1)(n+1) > 0$ $n < 0 \cup n > 1$ $D_f = (-\infty, 0) \cup (1, +\infty)$		
الف) $y = \frac{r}{f^n + 1}$ $f^n + 1 \neq 0 \quad f \neq -1$ $\mathbb{R}$	ب) $y = \frac{r}{f^n - 1}$ $f^n - 1 \neq 0 \quad f \neq 1$ $\mathbb{R} - \{0\}$	2-1) $y = \frac{r}{f^n - r}$ $f^n - r \neq 0 \quad f \neq r$ $\mathbb{R} - \{\log_r r\}$	3) $y = \frac{r}{f^n - r}$ $f^n - r \neq 0 \quad f \neq r$ $\mathbb{R} - \{\log_r r\}$
الف) $y = (r^n + 1)!$ $r^n + 1 \in \mathbb{N}$ $r^n \in \mathbb{N} - 1 \quad n \in \frac{\mathbb{N} - 1}{r}$ $\{n \mid n = \frac{k-1}{r}, k \in \mathbb{N}\}$	ب) $y = \left(\frac{r^n - r}{r^n - \delta}\right)!$ $\frac{r^n - r}{r^n - \delta} \in \mathbb{N}$ $r^n w - \delta w \in r^n - r$ $r^n w - r^n \in \delta w - r$ $n(rw - r) \in \delta w - r$ $n \in \frac{\delta w - r}{rw - r} \quad \{n \mid n \in \frac{\delta k - r}{rk - r}, k \in \mathbb{N}\}$		