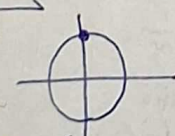
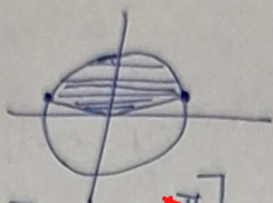
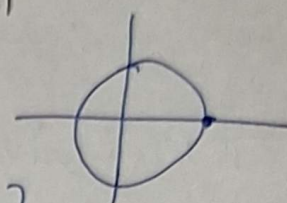


الف) $y = \sqrt{\frac{n^2-4n}{n^2-n}}$ $D_f = (-1, 0) \cup (0, 1) \cup [4, +\infty)$ $\frac{n(n-4)}{n(n^2-1)} = \frac{n(n-4)}{n(n+1)(n-1)}$ $\frac{n}{y} \mid \begin{array}{c} -1 \\ 0^* \\ 1 \\ 4 \end{array}$ $y \mid \begin{array}{c} - \\ + \\ - \\ + \end{array}$ 1, 4, 6 ✓	ب) $y = \sqrt{\frac{n^2-4n}{n^2-n}}$ $D_f = (-\infty, -1] \cup (0, 1) \cup [4, +\infty)$ $\frac{n^2(n^2-1)}{n^2(n-1)} = \frac{n \cdot n \cdot n \cdot (n+1)(n-1)}{n \cdot n \cdot (n-1)}$ $\frac{n}{y} \mid \begin{array}{c} -1 \\ 0 \\ 1^* \\ 4 \end{array}$ $y \mid \begin{array}{c} + \\ - \\ + \\ + \end{array}$	1
الف) $y = \frac{n+1}{\sqrt{n+1}}$ + ✓ 0 α - α $D_f = \mathbb{R}^+$ 2 ✓	ب) $y = \frac{1}{\sqrt{n+1}}$ + ✓ - α 0 α $D_f = \mathbb{R}^+$	2
الف) $y = \sqrt{2-n}$ $D_f = (-\infty, 2)$ $\frac{n}{y} \mid \begin{array}{c} 2 \\ 3 \end{array}$ $y \mid \begin{array}{c} + \\ 0 \\ - \end{array}$ 2 ✓	ب) $y = \frac{1}{\sqrt{2-n}}$ $\frac{n}{y} \mid \begin{array}{c} 2 \\ 3 \end{array}$ $D_f = (-\infty, 2)$	3
الف) $y = \sqrt{\left[n - \frac{1}{n}\right] + \left[n + \frac{1}{n}\right]}$ $D_f = \left[\frac{1}{n}, +\infty\right)$ $\left[n - \frac{1}{n}\right] + \left[n + \frac{1}{n}\right] \geq 0$ $\left[n + \frac{1}{n}\right] + \left[n + \frac{1}{n}\right] \geq 1 \Rightarrow 2\left[n + \frac{1}{n}\right] \geq 1 \Rightarrow n + \frac{1}{n} \geq \frac{1}{2}$ $\left[n + \frac{1}{n}\right] \geq \frac{1}{2} \Rightarrow \left[n + \frac{1}{n}\right] \geq 1 \Rightarrow n + \frac{1}{n} \geq 1$	ب) $y = \sqrt{\left[n - \frac{1}{n}\right] + \left[-n + \frac{1}{n}\right]}$ $n - \frac{1}{n} \in \mathbb{Z} \rightarrow n \in \mathbb{Z} + \frac{1}{n}$ $\left[n - \frac{1}{n}\right] + \left[-(n - \frac{1}{n})\right] \geq 0$ $n - \frac{1}{n} = 0 \Rightarrow \checkmark$ $n - \frac{1}{n} > 0 \Rightarrow \alpha$ $n - \frac{1}{n} < 0 \Rightarrow \nexists \mathbb{Z}$ بر شتر کلی نه عضو 2 ✓ $D_f = \{n \mid n - \frac{1}{n} \in \mathbb{Z}\}$	4
الف) $y = \frac{2}{\sin n - 1} \Rightarrow \sin n \neq 1$ $\neq 0$  $D_f = \mathbb{R} - \left\{2k\pi + \frac{\pi}{2}\right\}$ 1 ✓	ب) $y = \frac{2}{\sqrt{\sin n - 1}}$ $\sqrt{\sin n - 1} \neq 1$ $\sin^2 n \neq 1$ $\sin n \neq \pm \frac{1}{2}$ $\sin n \neq \pm \frac{\sqrt{3}}{2}$ $D_f = \{n \mid \sin n \neq \pm \frac{1}{2}\}$ 5 ✓ $k\pi \pm \frac{\pi}{6}$	5

الف) $y = \sqrt{2 \sin x - 1}$ $2 \sin x \geq 1$ $\sin x \geq \frac{1}{2}$  $Df = \left[2k\pi + \frac{\pi}{6}, 2k\pi + \frac{5\pi}{6} \right]$ 1, v b ✓	ب) $y = \sqrt{\cos x - 1}$ $\cos x \geq 1$  $Df = \{ 2k\pi \}$ 6		
الف) $\cos y = x - 2$ $-1 \leq x - 2 \leq 1$ $-1 \leq x - 2 \Rightarrow 1 \leq x \Rightarrow 1 \leq x, x \leq -1$ $x - 2 \leq 1 \Rightarrow x \leq 3 \Rightarrow x \leq 3, x \geq -3$ $Df = [-3, -1] \cup [1, 3]$ (b) ✓	ب) $y = \arcsin(x^2 + 2x + 1)$ $(-\infty, -2] \cup [1, +\infty)$ $-1 \leq x^2 + 2x + 1 \leq 1$ $-1 \leq x^2 + 2x + 1 - 1 + 1 \leq 1$ $-1 \leq (x+1)(x+2) - 1 \leq 1$ $0 \leq (x+1)(x+2) \leq 2$ $0 \leq (x+1)(x+2), (x+1)(x+2) - 2 \leq 0$ $Df = [-2, -1] \cup [1, 0]$ 7		
الف) $y = \sqrt{2 - \log_2(x-2)}$ $x-2 > 0 \Rightarrow x > 2$ $\log_2(x-2) \leq 2 \Rightarrow x-2 \leq 4 \Rightarrow x \leq 6$ $2 < x \leq 6$ $Df = (2, 6]$ (b) ✓	ب) $y = \log(x^2 - x)$ $x^2 - x > 0 \Rightarrow x(x-1) > 0$ $x < 0 \text{ or } x > 1$ $Df = (-\infty, 0) \cup (1, +\infty)$ 8		
الف) $y = \frac{x}{x^2 + 1}$ $x^2 \neq -1 \Rightarrow x \in \mathbb{R}$ $Df = \mathbb{R}$	ب) $y = \frac{x}{x^2 - 1}$ $x^2 \neq 1$ $x \neq 1$ $x \neq -1$ $Df = \mathbb{R} - \{0\}$ (b) ✓	ج) $y = \frac{x}{x^2 - 2}$ $x^2 \neq 2$ $x \neq \sqrt{2}$ $x \neq -\sqrt{2}$ $Df = \mathbb{R} - \left\{ \frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}} \right\}$	د) $y = \frac{x}{x^2 - x}$ $x^2 \neq x$ $x \neq 1$ $x \neq 0$ $Df = \mathbb{R} - \left\{ \log_2 \frac{x}{x-1} \right\}$ 9
الف) $y = (x^2 + 1)!$ $x^2 + 1 \in \mathbb{N}$ $x^2 \in \mathbb{N} - 1$ $x \in \mathbb{N} - 1$ $Df = \left\{ x \mid x = \frac{k-1}{2}, k \in \mathbb{N} \right\}$ (b) ✓	ب) $y = \left(\frac{x^2 - 1}{x^2 + 1} \right)!$ $\frac{x^2 - 1}{x^2 + 1} \in \mathbb{N}$ $x^2 - 1 \in \mathbb{N} - 1$ $x^2 \in \mathbb{N}$ $x \in \mathbb{N}$ $Df = \left\{ x \mid x = \frac{k-1}{2}, k \in \mathbb{N} \right\}$ 10		