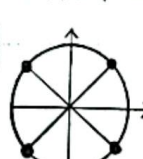
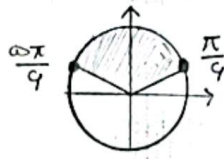
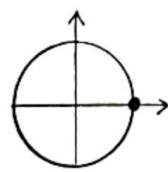
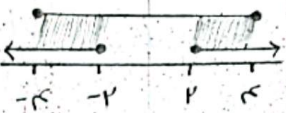
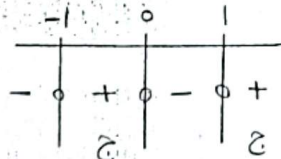


الف) $y = \sqrt{\frac{x^2 - 4x}{x^3 - x}} \Rightarrow \frac{x^2 - 4x}{x^3 - x} \geq 0$ $D_f = (-1, 1) \cup [4, +\infty)$	$\frac{-1}{-} + \frac{0}{0} + \frac{+1}{+} + \frac{4}{+}$ $\begin{cases} x^2 - 4x = 0 \\ x(x-4) = 0 \end{cases} \Rightarrow \begin{cases} x = 0 \\ x = 4 \end{cases}$ $\begin{cases} x^3 - x = 0 \\ x(x^2 - 1) = 0 \end{cases} \Rightarrow \begin{cases} x = 0 \\ x = \pm 1 \end{cases}$	1
ب) $y = \sqrt{\frac{x^3 - x^2}{x^3 - x}} \Rightarrow \frac{x^3 - x^2}{x^3 - x} \geq 0$ $D_f = \mathbb{R} - \{\pm 1, 0\}$	$\frac{-1}{+} + \frac{0}{0} + \frac{+1}{+}$ $\begin{cases} x^3 - x^2 = 0 \\ x^2(x-1) = 0 \end{cases} \Rightarrow \begin{cases} x = 0 \\ x = 1 \end{cases}$ $\begin{cases} x^3 - x = 0 \\ x(x^2 - 1) = 0 \end{cases} \Rightarrow \begin{cases} x = 0 \\ x = \pm 1 \end{cases}$	1
الف) $y = \frac{x+1}{\sqrt{x+ x }}$ $x+ x > 0$ $x > -x$ $D_f = \mathbb{R}^+$ $\begin{matrix} + \\ \circ \\ - \end{matrix} \begin{matrix} \checkmark \\ \times \\ \times \end{matrix}$	ب) $y = \frac{1}{\sqrt{x x }}$ $x x > 0$ $D_f = \mathbb{R}^+$ $\begin{matrix} + \\ \circ \\ - \end{matrix} \begin{matrix} \checkmark \\ \times \\ \times \end{matrix}$	۲
الف) $y = \sqrt{2 - [x]}$ $2 - [x] \geq 0$ $[x] \leq 2$ $x < 3$ $D_f = (-\infty, 3)$	ب) $y = \frac{1}{\sqrt{2 - [x]}}$ $2 - [x] > 0$ $[x] < 2$ $x < 2$ $D_f = (-\infty, 2)$	۳
الف) $y = \sqrt{[x - \frac{1}{p}] + [x + \frac{p}{p}]} \rightarrow [x - \frac{1}{p}] + [x + \frac{p}{p}] \geq 0 \Rightarrow [x + \frac{p}{p} - 1] + [x + \frac{p}{p}] \geq 0 \Rightarrow$ $2[x + \frac{p}{p}] - 1 \geq 0 \rightarrow [x + \frac{p}{p}] \geq \frac{1}{2} \Rightarrow x + \frac{p}{p} \geq 1 \Rightarrow x \geq \frac{p}{p}$ $D_f = [\frac{p}{p}, +\infty)$	ب) $y = \sqrt{[x - \frac{1}{p}] + [-x + \frac{1}{p}]} \Rightarrow [x - \frac{1}{p}] + [-x + \frac{1}{p}] \geq 0$ if $\begin{cases} \alpha \in \mathbb{Z} \Rightarrow 0 \leq \alpha < 1 \\ \alpha \notin \mathbb{Z} \Rightarrow -1 \leq \alpha < 0 \end{cases}$ $x - \frac{1}{p} \in \mathbb{Z} \rightarrow x \in \mathbb{Z} + \frac{1}{p}$ $D_f = \{x x = k + \frac{1}{p}, k \in \mathbb{Z}\}$	۴
الف) $y = \frac{p}{\sin x - 1}$ $\sin x - 1 \neq 0$ $\sin x \neq 1$ $D_f = \mathbb{R} - \{2k\pi + \frac{\pi}{2}\}$ 	ب) $y = \frac{p}{p \sin^p x - 1}$ $p \sin^p x - 1 \neq 0$ $\sin^p x \neq \frac{1}{p}$ $\sin x \neq \pm \sqrt[p]{\frac{1}{p}}$ $D_f = \mathbb{R} - \{k\pi - \frac{\pi}{p}, k\pi + \frac{\pi}{p}\}$ 	۵

الف) $y = \sqrt{x \sin x - 1}$ $x \sin x - 1 \geq 0$ $\sin x \geq \frac{1}{x}$ $D_f = \left[2k\pi + \frac{\pi}{9}, 2k\pi + \frac{5\pi}{9} \right]$ 	ب) $y = \sqrt{\cos x - 1}$ $\cos x - 1 \geq 0$ $\cos x \geq 1$ $D_f = \mathbb{R} - \{2k\pi\}$ 	6
الف) $\cos y = x - 2$ $-1 \leq x - 2 \leq 1 \rightarrow 1 \leq x \leq 3$ $\{x \mid 1 \leq x \leq 3\} = x \geq 1 \cup x \leq -1$ $x \leq 3 \rightarrow -3 \leq x \leq 3$  $D_f = [-3, -1] \cup [1, 3]$	7	
ب) $\arcsin(x^2 + 2x + 1)$ $(x^2 + 2x + 1) \in [-1, 1]$ (I) $-1 \leq x^2 + 2x + 1 \leq 1$ $x^2 + 2x + 1 \geq -1 \Rightarrow x^2 + 2x + 2 \geq 0$ $x^2 + 2x + 1 \leq 1 \Rightarrow x^2 + 2x \leq 0 \Rightarrow x(x+2) \leq 0$ (II) $D_f = [-2, -1] \cup [-1, 0]$ (I) $\frac{-2}{-1} \leq \frac{-1}{-1} \Rightarrow 2 \leq 1$ (I) (II) $\frac{-2}{-1} \leq \frac{0}{-1} \Rightarrow 2 \leq 0$ (II)	8	
الف) $y = \sqrt{x - \log_{\mu}(x-2)}$ $x - 2 \geq 0 \Rightarrow x \geq 2$ $x - 2 \geq \log_{\mu}^{x-2} \Rightarrow \log_{\mu}^{x-2} \leq x - 2 \Rightarrow x - 2 \leq 9 \Rightarrow x \leq 11$ $D_f = [2, 11]$	9	
ب) $\log(x^2 - x)$ $x^2 - x > 0 \Rightarrow x(x-1) > 0$ $D_f = (-1, 0) \cup (1, +\infty)$ 	10	
الف) $y = \frac{x}{x^n + 1}$ $x^n + 1 \neq 0$ $x^n \neq -1$ $D_f = \mathbb{R}$ حوار به مقدار	ب) $y = \frac{x}{x^n - 1}$ $x^n - 1 \neq 0$ $x^n \neq 1$ $x \neq 0$ $D_f = \mathbb{R} - \{0\}$	11
ج) $y = \frac{x}{x^n - 2}$ $x^n - 2 \neq 0$ $x^n \neq 2 \Rightarrow x^{n/2} \neq \sqrt{2}$ $x \neq 1 \Rightarrow x \neq \frac{1}{2}$ $D_f = \mathbb{R} - \left\{ \frac{1}{2} \right\}$	د) $y = \frac{x}{x^n - \mu}$ $x^n - \mu \neq 0$ $x^n \neq \mu$ $x \neq \log_{\mu}^{\mu}$ $D_f = \mathbb{R} - \{ \log_{\mu}^{\mu} \}$	12
الف) $y = (x+1)!$ $x+1 \in \mathbb{N}$ $x \in \mathbb{N} - 1$ $x \in \frac{\mathbb{N} - 1}{1}$	$D_f = \{x \mid x = \frac{k-1}{1}, k \in \mathbb{N}\}$	13
ب) $y = \left(\frac{x^n - 2}{x^n - \omega} \right)!$ $\frac{x^n - 2}{x^n - \omega} \in \mathbb{N}$ $x^n - 2 \in \mathbb{N} \omega - \omega \omega$ $x^n - x^n \omega \in -\omega \omega + 2$ $x \in \frac{-\omega \omega + 2}{x^n - 2 \omega}$ $D_f = \{x \mid x = \frac{-\omega k + 2}{x^n - 2 \omega}, k \in \mathbb{N}\}$	14	