

الف) $y = \sqrt{\frac{x^2 - 4x}{x^2 - x}} \Rightarrow \frac{x(x-4)}{x(x^2-1)} \Rightarrow \frac{-1}{\frac{1}{x} + \frac{1}{x} + \frac{1}{x} - 4} \Rightarrow D_f = (-1, 0) \cup (0, 1) \cup (4, +\infty)$

ب) $y = \sqrt{\frac{x^2 - 4x}{x^2 - x}} \Rightarrow \frac{x^2(x^2-1)}{x(x^2-1)} \Rightarrow \frac{-1}{\frac{1}{x} + \frac{1}{x} + \frac{1}{x} + 4} \Rightarrow D_f = (-\infty, -1) \cup (-1, 0) \cup (0, 1) \cup (1, +\infty)$

الف) $y = \frac{x+1}{\sqrt{x+|x|}} \Rightarrow x+|x| > 0 \Rightarrow |x| > -x \Rightarrow D_f = (-, +\infty)$

ب) $y = \frac{1}{\sqrt{x|x|}} \Rightarrow x|x| > 0 \Rightarrow D_f = (-, +\infty)$

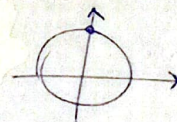
الف) $y = \sqrt{2 - [x]} \Rightarrow 2 - [x] \geq 0 \Rightarrow 2 \geq [x] \Rightarrow D_f = (-\infty, 2)$

ب) $y = \frac{1}{\sqrt{2 - [x]}} \Rightarrow 2 - [x] > 0 \Rightarrow 2 > [x] \Rightarrow D_f = (-\infty, 2)$

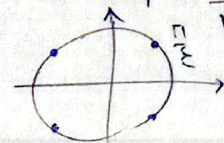
الف) $\sqrt{[n + \frac{1}{e}] + [n - \frac{1}{e}]} \Rightarrow [n - \frac{1}{e}] + [n + \frac{1}{e}] \geq 0 \Rightarrow [n - \frac{1}{e}] + 1 = [n + \frac{1}{e}]$
 $2[n - \frac{1}{e}] + 1 \geq 0 \Rightarrow [n - \frac{1}{e}] \geq 0 \Rightarrow n \geq \frac{1}{e} \Rightarrow D_f = [\frac{1}{e}, +\infty)$

ب) $\sqrt{[n - \frac{1}{e}] + [n + \frac{1}{e}]} \Rightarrow n - \frac{1}{e} \in \mathbb{Z} \Rightarrow D_f = \{n + \frac{1}{e} \mid n \in \mathbb{Z}\}$

الف) $y = \frac{x}{\sin x - 1} \Rightarrow \sin x - 1 \neq 0 \Rightarrow \sin x \neq 1$
 $D_f = \mathbb{R} - \{2K\pi + \frac{\pi}{2}\}$

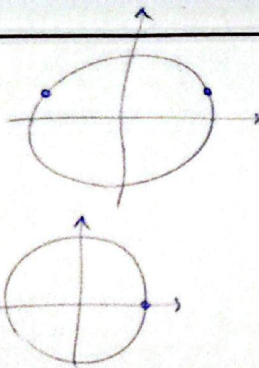


ب) $y = \frac{x}{x \sin^2 x - 1} \Rightarrow x \sin^2 x - 1 \neq 0 \Rightarrow \sin x \neq \pm \frac{1}{\sqrt{x}} \Rightarrow \sin x \neq \pm \frac{1}{\sqrt{x}}$
 $D_f = \mathbb{R} - \{K\pi \pm \frac{\pi}{2}\}$



$$\text{a) } y = \sqrt{r \sin u - 1} \Rightarrow r \sin u - 1 \geq 0 \Rightarrow \sin u \geq \frac{1}{r}$$

$$D_f = \left\{ rKn + \frac{\pi}{4}, rKn + \frac{5\pi}{4} \right\}$$



$$\rightarrow \sqrt{\cos u - 1} \Rightarrow \cos u - 1 \geq 0 \Rightarrow \cos u \geq 1$$

$$D_f = \{ rKn \}$$

$$\text{a) } \cos y = |u| - r \Rightarrow -1 \leq |u| - r \leq 1 \Rightarrow r \leq |u| \leq r+1 \Rightarrow \begin{cases} -r-1 \leq u \leq -r \\ r \leq u \leq r+1 \end{cases}$$

$$D_f = [-r-1, -r] \cup [r, r+1]$$

$$\rightarrow y = \arcsin(u^r + r^{n+1}) \Rightarrow -1 \leq u^r + r^{n+1} \leq 1$$

$$D_f = [-r, -r] \cup [-1, 0]$$

$$\begin{cases} u^r + r^{n+1} \leq 1 \Rightarrow u^r + r^n \leq 0 \\ u(u+r) \leq 0 \Rightarrow -r \leq u \leq 0 \\ u^r + r^{n+1} \geq -1 \Rightarrow u^r + r^{n+1} \geq 0 \\ (u+1)(u-r) \geq 0 \Rightarrow u \leq -r \\ \hookrightarrow u \geq -1 \end{cases}$$

$$\text{a) } y = \sqrt{r - \log_e^{(n-r)}} \begin{cases} u-r \geq 0 \Rightarrow u \geq r \\ r - \log_e^{(n-r)} \geq 0 \Rightarrow r \geq \log_e^{(n-r)} \Rightarrow r > n-r \Rightarrow 1 < n \end{cases}$$

$$D_f = (r, \infty)$$

$$\rightarrow y = \log_e(u^r - u) \Rightarrow u^r - u > 0 \Rightarrow u(u^{r-1} - 1) > 0$$

$$D_f = (-1, 0) \cup (1, +\infty)$$

$$\text{a) } y = \frac{r}{\varepsilon^{n+1}} \quad D_f = \mathbb{R}$$

$$\geq \frac{r}{\varepsilon^n - r} \quad D_f = \mathbb{R} - \left\{ \frac{1}{r} \right\}$$

$$\rightarrow y = \frac{r}{\varepsilon^n - 1} \quad D_f = \mathbb{R} - \{0\}$$

$$\rightarrow y = \frac{r}{\varepsilon^n - e} \quad D_f = \mathbb{R} - \left\{ \log_e^e \right\}$$

$$\text{a) } y = (\varepsilon n + 1)! \Rightarrow \varepsilon n + 1 \in \omega \Rightarrow \varepsilon n \in \omega - 1 \Rightarrow n \in \frac{\omega - 1}{\varepsilon}$$

$$D_f = \left\{ n \mid n = \frac{K-1}{\varepsilon}, K \in \omega \right\}$$

$$\rightarrow y = \left(\frac{r_n - r}{r_n - \omega} \right)! \Rightarrow \frac{r_n - r}{r_n - \omega} \in \omega \Rightarrow r_n - r \in r_n \omega - \omega \Rightarrow r_n - r \in \omega$$

$$D_f = \left\{ n \mid n = \frac{-\omega K + r}{r - rK}, K \in \omega \right\}$$