

19, 17, 25

الف) $y = \sqrt{\frac{n^2 - 4n}{n^2 - n}} \Rightarrow \frac{n(n-4)}{n(n^2-1)} = \frac{-1}{\frac{1}{3} + \frac{1}{3} + \frac{1}{3} - 1} + \frac{4}{-1} + \frac{1}{\frac{1}{3} + \frac{1}{3} + \frac{1}{3} - 1} + \frac{4}{-1}$ $D_f = (-1, 0) \cup (0, 1) \cup [4, +\infty)$

ب) $y = \sqrt{\frac{n^2 - 4n}{n^2 - n}} \Rightarrow \frac{n(n-4)}{n(n^2-1)} = \frac{-1}{\frac{1}{3} + \frac{1}{3} + \frac{1}{3} - 1} + \frac{4}{-1} + \frac{1}{\frac{1}{3} + \frac{1}{3} + \frac{1}{3} - 1} + \frac{4}{-1}$ $D_f = (-\infty, -1) \cup (-1, 0) \cup (0, 1) \cup (1, +\infty)$

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

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

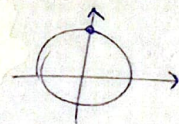
الف) $y = \sqrt{2-[n]} \Rightarrow 2-[n] \geq 0 \Rightarrow 2 \geq [n] \Rightarrow D_f = (-\infty, 2)$

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

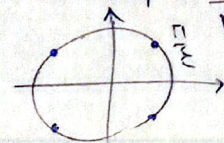
الف) $\sqrt{[n+\frac{1}{2}]+[n-\frac{1}{2}]} \Rightarrow [n-\frac{1}{2}]+[n+\frac{1}{2}] \geq 0 \Rightarrow [n-\frac{1}{2}]+1 = [n+\frac{1}{2}]$
 $2[n-\frac{1}{2}]+1 \geq 0 \Rightarrow [n-\frac{1}{2}] \geq 0 \Rightarrow n \geq \frac{1}{2} \quad D_f = [\frac{1}{2}, +\infty)$

ب) $\sqrt{[n-\frac{1}{2}]+[n+\frac{1}{2}]} \Rightarrow n-\frac{1}{2} \in \mathbb{Z} \Rightarrow D_f = \{n+\frac{1}{2} \mid n \in \mathbb{Z}\}$

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

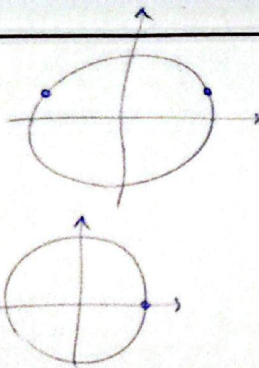


ب) $y = \frac{r}{r \sin^2 n - 1} \Rightarrow r \sin^2 n - 1 \neq 0 \Rightarrow \sin n \neq \pm \frac{1}{\sqrt{r}} \Rightarrow \sin n \neq \pm \frac{\sqrt{r}}{r}$
 $D_f = \mathbb{R} - \{K\pi \pm \frac{\pi}{2}\}$



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

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



$$\text{ب) } \sqrt{\cos u - 1} \Rightarrow \cos u - 1 \geq 0 \Rightarrow \cos u \geq 1$$

$$D_f = \{rKn\}$$

(C) ✓

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

$$D_f = [-e, -r] \cup [r, e]$$

$$\text{ب) } y = \arcsin(u^2 + 2u + 1) \Rightarrow -1 \leq u^2 + 2u + 1 \leq 1$$

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

جدول نین علامت با یونیتی

1, 7, 5

نقشه علامت: $u^2 + 2u + 1 \leq 1 \Rightarrow u(u+2) \leq 0 \Rightarrow -2 \leq u \leq 0$
 $u^2 + 2u + 1 \geq -1 \Rightarrow u^2 + 2u + 2 \geq 0 \Rightarrow (u+1)^2 + 1 \geq 0 \Rightarrow u \in \mathbb{R}$
 نتیجه: $-2 \leq u \leq 0$

$$\text{الف) } y = \sqrt{r - \log_e^{(u-r)}} \Rightarrow \begin{cases} u-r \geq 0 \Rightarrow u \geq r \\ r - \log_e^{(u-r)} \geq 0 \Rightarrow r \geq \log_e^{(u-r)} \Rightarrow e^r \geq u-r \Rightarrow u \leq e^r + r \end{cases}$$

$$D_f = (r, e^r + r]$$

(C) ✓

$$\text{ب) } y = \log_e(u^e - u) \Rightarrow u^e - u > 0 \Rightarrow u(u^{e-1} - 1) > 0$$

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

$$\text{الف) } y = \frac{r}{e^{u+1}} \quad D_f = \mathbb{R}$$

(C) ✓

$$\text{ب) } \frac{r}{e^u - r} \quad D_f = \mathbb{R} - \left\{\frac{1}{r}\right\}$$

$$\text{الف) } y = \frac{r}{e^u - 1} \quad D_f = \mathbb{R} - \{0\}$$

$$\text{ب) } \frac{r}{e^u - e} \quad D_f = \mathbb{R} - \{\log_e e\}$$

$$\text{الف) } y = (en+1)! \Rightarrow en+1 \in \mathbb{N} \Rightarrow en \in \mathbb{N} - 1 \Rightarrow n \in \frac{\mathbb{N}-1}{e}$$

$$D_f = \{n | n = \frac{K-1}{e}, K \in \mathbb{N}\}$$

$$\text{ب) } y = \left(\frac{ru-r}{ru-a}\right)! \Rightarrow \frac{ru-r}{ru-a} \in \mathbb{N} \Rightarrow ru-r \in r\mathbb{N} - a\mathbb{N} \Rightarrow ru-r \in \mathbb{N}$$

$$D_f = \{n | n = \frac{-aK+r}{r-rK}, K \in \mathbb{N}\}$$

(C) ✓