

الف) $y = \sqrt{\left[n - \frac{1}{r}\right] + \left[n + \frac{r}{r}\right]} \rightarrow \left[n - \frac{1}{r}\right] + \left[n + \frac{r}{r}\right] \geq 0 \rightarrow +1$

$2\left[n + \frac{r}{r}\right] \geq 1 \rightarrow \left[n + \frac{r}{r}\right] \geq \frac{1}{2} \rightarrow n + \frac{r}{r} \geq \frac{1}{2} \rightarrow n \geq \frac{1}{r} \rightarrow D_f = \left[\frac{1}{r}, +\infty\right)$

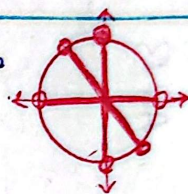
ب) $y = \sqrt{\left[n - \frac{1}{r}\right] + \left[\frac{1}{r} - n\right]} \rightarrow \left[n - \frac{1}{r}\right] + \left[\frac{1}{r} - n\right] \geq 0 \rightarrow \begin{cases} [-n] + [n] \geq 0 \\ \text{if } n \in \mathbb{Z} \rightarrow 0 \checkmark \\ [-n] + [n] \geq 0 \\ \text{if } n \notin \mathbb{Z} \rightarrow -1 \times \end{cases}$

$\left[n - \frac{1}{r}\right] \in \mathbb{Z} \rightarrow n - \frac{1}{r} \in \mathbb{Z} \rightarrow n \in \mathbb{Z} + \frac{1}{r}$

$D_f = \left\{n \mid n = k + \frac{1}{r}, k \in \mathbb{Z}\right\}$

الف) $y = \frac{\cot n + 1}{\tan n + 1} \xrightarrow{\frac{\cos n}{\sin n} + 1} \tan n \neq -1, \cos n \neq 0, \sin n \neq 0$

$\rightarrow D_f = \mathbb{R} - \left\{k\pi + \frac{3\pi}{4}, k\pi, k\pi + \frac{\pi}{4}\right\}$



ب) $y = \sqrt{1 - r \sin^2 n} \rightarrow 1 - r \sin^2 n \geq 0 \rightarrow r \sin^2 n \leq 1 \rightarrow \sin^2 n \leq \frac{1}{r}$

$D_f = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4}\right] \leftarrow \frac{\sqrt{r}}{r} \leq \sin n \leq \frac{\sqrt{r}}{r}$

الف) $y = \sqrt{r \sin n - 1} \rightarrow r \sin n - 1 \geq 0 \rightarrow \sin n \geq \frac{1}{r} \rightarrow D_f = \left[rk\pi + \frac{\pi}{4}, rk\pi + \frac{3\pi}{4}\right] \checkmark$

ب) $y = \sqrt{1 - r \cos n} \rightarrow 1 - r \cos n \geq 0 \rightarrow \cos n \leq \frac{1}{r} \rightarrow D_f = \left[rk\pi + \frac{\pi}{r}, rk\pi + \frac{2\pi}{r}\right]$

الف) $y = \arcsin(n^2 + rn + 1) \rightarrow \frac{a}{r} - 1 \leq n^2 + rn + 1 \leq 1 + \frac{a}{r}$

$\frac{1}{r} \leq n^2 + rn + \frac{a}{r} \leq \frac{a}{r}$

$\frac{1}{r} \leq \left(n + \frac{r}{2}\right)^2 \leq \frac{a}{r}$

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

$\left[\begin{array}{l} n + \frac{r}{2} \geq \frac{1}{r} \\ \rightarrow \boxed{n \geq -1} \\ n + \frac{r}{2} \leq \frac{-1}{r} \\ \rightarrow \boxed{n \leq -r} \end{array} \right.$

$n + \frac{r}{2} \leq \frac{r}{2} \rightarrow n \leq 0$
 $\frac{-r}{2} \leq n + \frac{r}{2} \rightarrow n \geq -r$
 $\downarrow$
 $[0, -r]$

(الف) $y = \sqrt{\left[n - \frac{1}{r}\right] + \left[n + \frac{r}{r}\right]} \rightarrow \left[n - \frac{1}{r}\right] + \left[n + \frac{r}{r}\right] + 1 \geq 0 + 1$

$2\left[n + \frac{r}{r}\right] \geq 1 \rightarrow \left[n + \frac{r}{r}\right] \geq \frac{1}{2} \rightarrow n + \frac{r}{r} \geq \frac{1}{2} \rightarrow n \geq \frac{1}{2} - \frac{r}{r} \rightarrow D_f = \left[\frac{1}{2}, +\infty\right)$

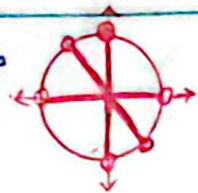
(ب) $y = \sqrt{\left[n - \frac{1}{r}\right] + \left[\frac{1}{r} - n\right]} \rightarrow \left[n - \frac{1}{r}\right] + \left[-n + \frac{1}{r}\right] \geq 0 \rightarrow \begin{cases} [-n] + [n] \geq 0 \\ \text{if } n \in \mathbb{Z} \rightarrow 0 \checkmark \\ [-n] + [n] \geq -1 \\ \text{if } n \in \mathbb{Z} \rightarrow -1 \times \end{cases}$

$\left[n - \frac{1}{r}\right] \in \mathbb{Z} \rightarrow n - \frac{1}{r} \in \mathbb{Z} \rightarrow n \in \mathbb{Z} + \frac{1}{r}$

$D_f = \left\{ n \mid n = k + \frac{1}{r}, k \in \mathbb{Z} \right\}$

(الف) $y = \frac{\cot n + 1}{\tan n + 1} \xrightarrow{\frac{\cos n}{\sin n} + 1} \tan n \neq -1, \cos n \neq 0, \sin n \neq 0$

$\rightarrow D_f = \mathbb{R} - \left\{ k\pi + \frac{\pi}{4}, k\pi, k\pi + \frac{3\pi}{4} \right\}$



(4)

(ب) $y = \sqrt{1 - r \sin^2 n} \rightarrow 1 - r \sin^2 n \geq 0 \rightarrow r \sin^2 n \leq 1$
 $\sin^2 n \leq \frac{1}{r}$

$D_f = \left[k\pi - \frac{\pi}{4}, k\pi + \frac{\pi}{4} \right] \leftarrow -\frac{\sqrt{r}}{r} \leq \sin n \leq \frac{\sqrt{r}}{r}$

(الف) $y = \sqrt{r \sin n - 1} \rightarrow r \sin n - 1 \geq 0 \rightarrow \sin n \geq \frac{1}{r} \rightarrow D_f = \left[r k\pi + \frac{\pi}{4}, r k\pi + \frac{3\pi}{4} \right] \checkmark$

(ب) $y = \sqrt{1 - r \cos n} \rightarrow 1 - r \cos n \geq 0 \rightarrow \cos n \leq \frac{1}{r}$
 $\rightarrow D_f = \left[r k\pi + \frac{\pi}{r}, r k\pi + \frac{2\pi}{r} \right]$

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

(1)

$\frac{1}{r} \leq n^r + r n + \frac{1}{r} \leq \frac{1}{r}$

$\frac{1}{r} \leq \left(n + \frac{r}{r}\right)^r \leq \frac{1}{r}$

$n + \frac{r}{r} \leq \frac{1}{r} \rightarrow n \leq 0$
 $\frac{1}{r} \leq n + \frac{r}{r} \rightarrow n \geq -1$

$\downarrow$
 $[0, -1]$

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

$\left[\begin{array}{l} n + \frac{r}{r} \geq \frac{1}{r} \\ \rightarrow n \geq -1 \\ n + \frac{r}{r} \leq \frac{1}{r} \\ \rightarrow n \leq -1 \end{array} \right.$

ب) $\cos y = \sqrt{\omega - 2m}$

$$\rightarrow -1 \leq \sqrt{\omega - 2m} \leq 1 \rightarrow 0 \leq \omega - 2m \leq 1$$

$$- \omega \leq -2m \leq -\omega - 1$$

$$D_f = 2 \leq m \leq \frac{\omega}{2} \leftarrow \frac{\omega}{2} \geq m \geq 2$$

الف) $y = \log_r(1 - \log_r^n)$

$$\rightarrow 1 - \log_r^n > 0 \rightarrow \log_r^n < 1$$

(9)

$$\rightarrow n < r, n > 0 \cup D_f = (0, r)$$

ب) $y = \log_r(1 - \log_{\frac{1}{r}}^n)$

$$\rightarrow 1 - \log_{\frac{1}{r}}^n > 0 \xrightarrow{\text{علامت غرضی نیست}} \log_{\frac{1}{r}}^n < 1$$

$$n > \frac{1}{r}, n > 0 \rightarrow D_f = (\frac{1}{r}, +\infty)$$

الف) $y = \sqrt{r^{2m-2n} - 1}$

$$\rightarrow r^3(r^{-2n+2m-2} - 1) \geq 0$$

(10)

$$\Rightarrow -2n + 2m - 2 = 0 \rightarrow n = 1, 3 \rightarrow \frac{1}{-2+2}$$

$$D_f = [1, 3]$$

ب) $y = \left(\frac{r^n + \omega}{r^n + \varepsilon}\right)!$

$$\rightarrow \frac{r^n + \omega}{r^n + \varepsilon} \in \mathbb{N} \rightarrow - \frac{r\omega - \omega}{r\omega - r}$$

$$D_f = \left\{ n \mid n = \frac{\omega - rkr}{rk - r}, k \in \mathbb{N} \right\}$$