

الف)  $n^3 - n > 0 \Rightarrow n(n-1)(n+1) > 0 \Rightarrow$  حل نسبی

|    |   |   |   |
|----|---|---|---|
| -1 | 0 | 1 | 2 |
| -  | + | + | + |
| -  | + | + | + |

$D_f = (-1, 0) \cup (1, +\infty)$   
 $D_g = (-1, 0) \cup (0, 1) \cup [2, +\infty)$

ب)  $n^3 - n > 0 \Rightarrow n^3 - n \leq (n^3 - 1) \leq n(n-1)(n+1)$

$n(n-1)(n+1) > 0 \Rightarrow$

|    |   |   |
|----|---|---|
| -1 | 0 | 1 |
| +  | + | + |
| +  | + | + |

$D_g = \mathbb{R} - \{-1, 0, 1\}$   
 $D_s = (-1, 0) \cup (1, +\infty)$

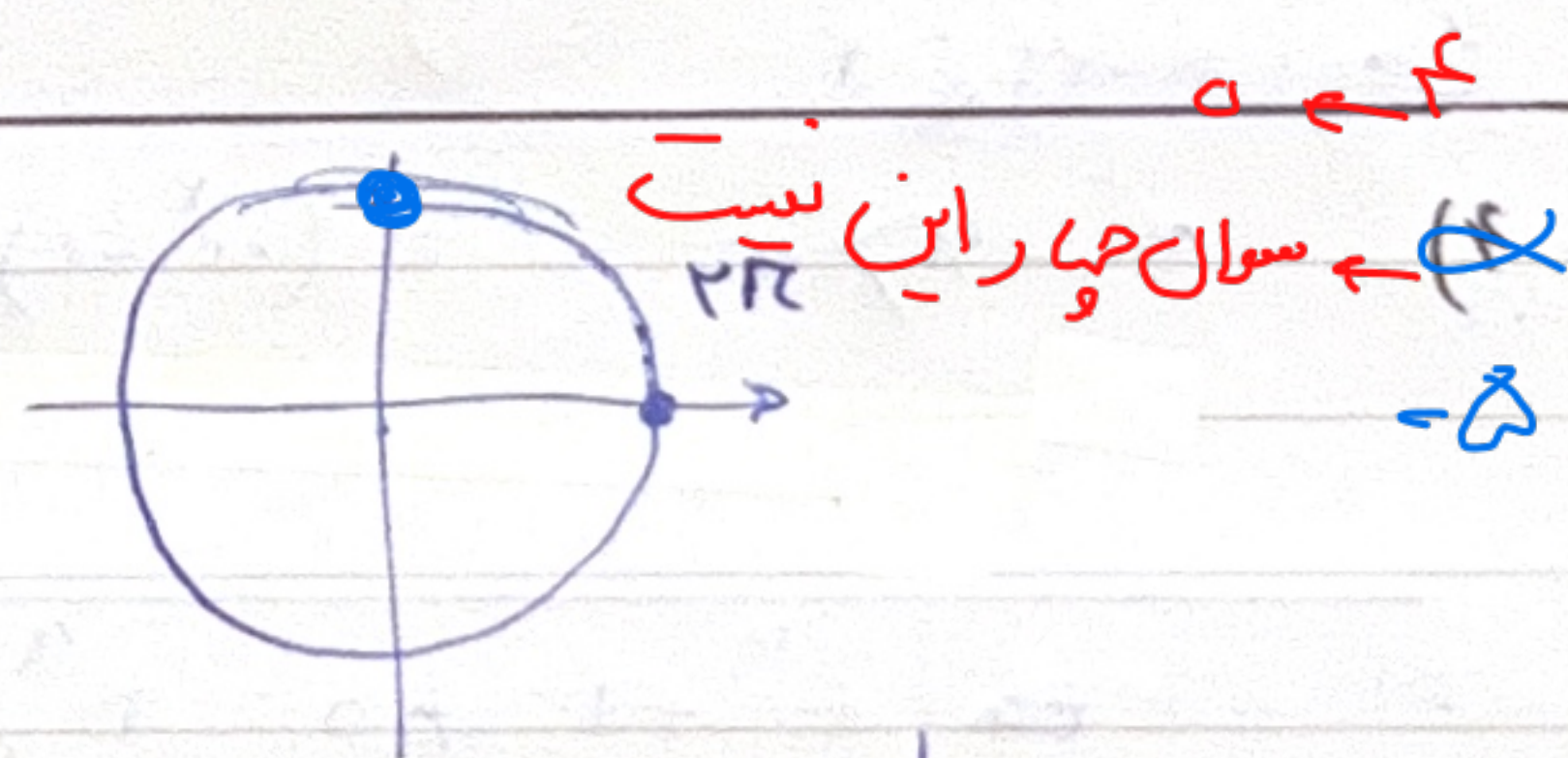
۱)  $n + |n| > 0 \Rightarrow D_s = (0, +\infty)$

۲)  $\textcircled{1}$   $n \neq 0 \Rightarrow D_s = (0, +\infty)$

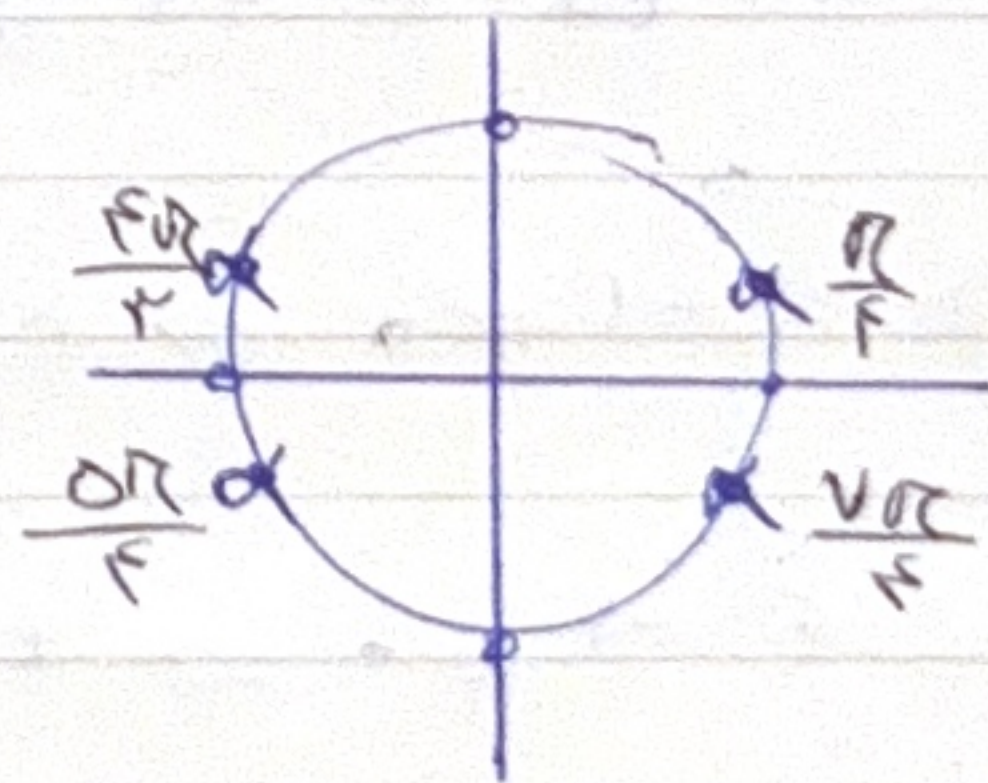
الف)  $-\frac{r}{r} > \frac{1}{r} \Rightarrow \frac{r}{r} < \frac{1}{r} \Rightarrow 1 < \frac{1}{r} \Rightarrow r < 1$   
 $D_g = (-\infty, 1)$

ب)  $[n] < 2 \Rightarrow D_g = (-\infty, 2)$

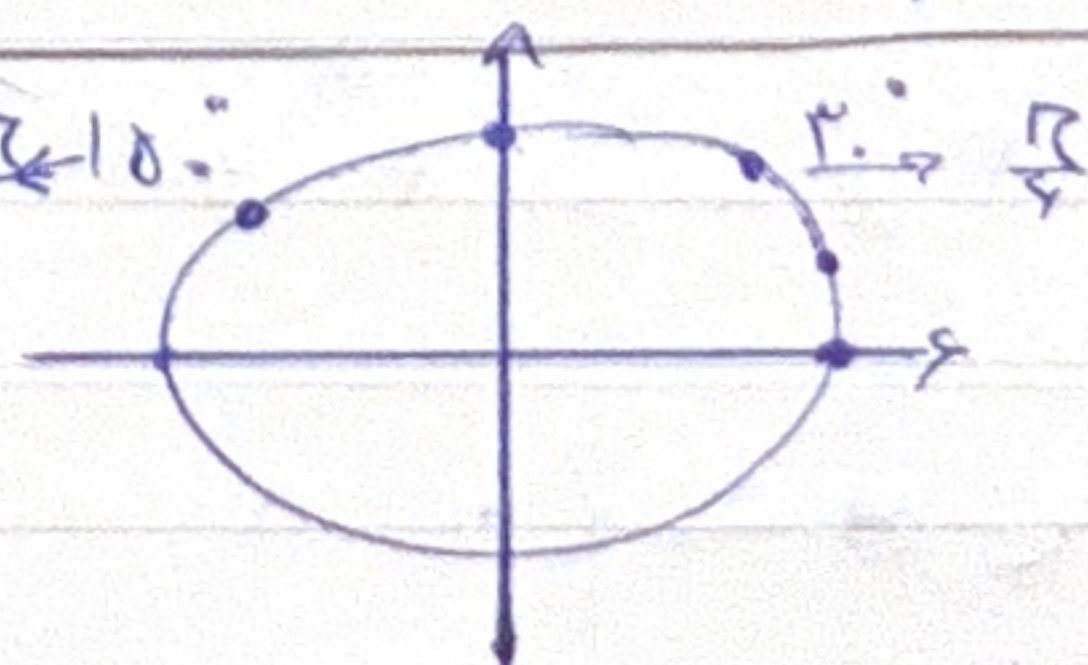
الف)  $\cos n - 1 \neq 0 \Rightarrow \cos n \neq 1$   
 $D_s = \mathbb{R} - \{2k\pi \mid k \in \mathbb{Z}\}$



ب)  $\sin^2 n - 1 \leq 0 \Rightarrow \sin^2 n \leq 1 \Rightarrow \sin n \leq \pm \frac{\sqrt{r}}{r}$   
 $D_s = \left\{ \frac{\pi}{r} + \frac{k\pi}{r} \mid k \in \mathbb{Z} \right\}$



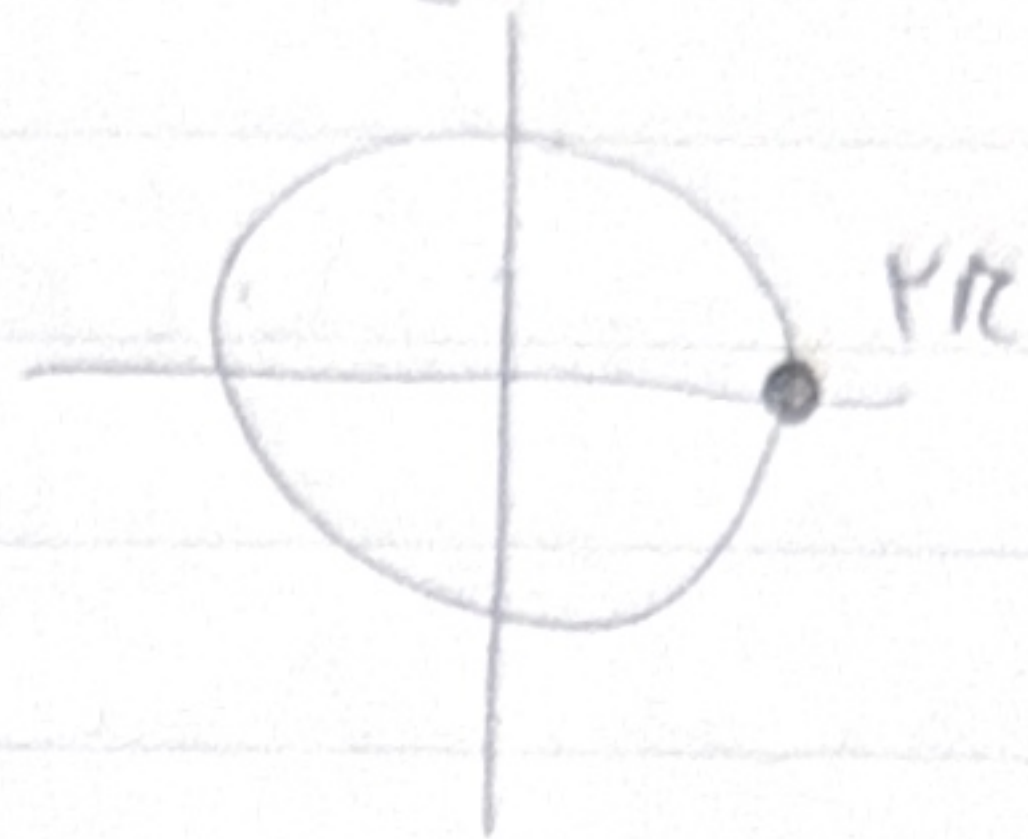
$\sin n \geq \frac{1}{r} \Rightarrow r \sin n - 1 \geq 0 \Rightarrow \sin n \geq \frac{1}{r}$   
 $D_s = \left[ \frac{\pi}{r} + 2k\pi, \frac{3\pi}{r} + 2k\pi \right]$



$$\cos m - 1 \geq 0 \Rightarrow \cos m \geq 1$$

$$\cos m = 1 \Rightarrow \cos m = 1$$

$$D = \{2k\pi \mid k \in \mathbb{Z}\}$$



$$\text{اگر } y = \sin m \Rightarrow \sin m \geq \frac{1}{2} \quad m \leq \frac{\pi}{4}, \frac{3\pi}{4} \Rightarrow m \in \left[ \frac{\pi}{4} + 2k\pi, \frac{3\pi}{4} + 2k\pi \right] \quad (9)$$

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$$\text{ب) } \cos m - 1 \geq 0 \Rightarrow \cos m \geq 1 \rightarrow 2k\pi \leq m \rightarrow \{2k\pi \mid k \in \mathbb{Z}\}$$

$$-1 \leq |m| - 3 \leq 1$$

$$\text{اگر } 2 \leq |m| \leq 4 \Rightarrow m \in [-4, -2] \cup [2, 4]$$

$$\begin{array}{c} -2 \quad -1 \\ + \quad - \quad - \quad + \end{array}$$

$$\text{ب) } y = \arcsin(m^r + m^{r+1}) \Rightarrow \begin{array}{c} -1 \leq m^r + m^{r+1} \leq 1 \\ + \quad - \quad - \quad + \end{array} \Rightarrow m^r + m^{r+1} \geq -1 \Rightarrow$$

$$\text{اگر } m - 2 > 0 \Rightarrow m > 2 \quad m - 2 < 4 \Rightarrow m < 6 \Rightarrow m \in (2, 6)$$

$$\log(m-2) \leq 2$$

$$\text{ب) } m^r - m > 0 \quad m(m^r - 1) > 0 \quad m(m-1)(m+1) > 0 \Rightarrow m > 0$$

$$\begin{array}{c} -1 \quad 0 \quad 1 \\ - \quad + \quad - \quad + \end{array}$$

$$\text{اگر } f^m + 1 \neq 0 \quad f^m > 0 \Rightarrow D = \mathbb{R}$$

$$\text{ب) } f - 1 \neq 0 \Rightarrow f \neq 1 \Rightarrow f = 1 \Rightarrow m \neq 0 \quad (2) \checkmark$$

$$\text{ج) } f - 2 \neq 0 \Rightarrow f \neq 2 \Rightarrow m \neq \log_r 2 \quad f^{\frac{1}{r}}, 2 \quad m \neq \frac{1}{r}$$

$$\text{د) } f - 3 \neq 0 \Rightarrow f \neq 3 \quad m \neq \log_f 3$$

$$\text{اگر } f_{n+1} \in \mathbb{W} \rightarrow \{0, 1, 2, \dots\} \rightarrow f_{n+1} \leq n$$

$$f_m \in \mathbb{W} - 1 \Rightarrow m \leq \frac{W-1}{f}$$

$$D_y = \{y \mid y = \frac{k-1}{f}, k \in \mathbb{W}\}$$

$$\frac{f_m - f}{f_m - a} \in \mathbb{W} \Rightarrow f_m - f \leq (f_m - a) \Rightarrow (f - f_m)m \leq f - am \Rightarrow \frac{f - am}{f - f_m}$$

$$D_y = \{y \mid y = \frac{W-k-1}{f}, k \in \mathbb{W}\}$$

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$$\left[ n - \frac{1}{p} \right] + \left[ n - \frac{1}{p} \right] + 1 \geq 0 \rightarrow \left[ n - \frac{1}{p} \right] \geq -1 \rightarrow \left[ n - \frac{1}{p} \right] \geq -\frac{1}{p} \rightarrow n - \frac{1}{p} \geq 0 \rightarrow n \geq \frac{1}{p}$$

$$n - \frac{1}{p} \in \mathbb{Z} \rightarrow n \in \mathbb{Z} + \frac{1}{p}$$

$$D_y = \{ n \mid n = k + \frac{1}{p}, k \in \mathbb{Z} \}$$

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