

$$2n^3 + 2n^2 - 11n + 2 \neq 0 \xrightarrow{\text{جمع فرایب}} (n-1)(2n^2 + 5n - 2) \neq 0, (n+2)(n-1) \quad \text{الف) ۴}$$

$$n \neq 1, -2, \frac{1}{2} \Rightarrow D_f = \mathbb{R} - \left\{ -2, 1, \frac{1}{2} \right\}$$

$$2n^3 + 9n^2 + 10n + 2 \neq 0 \xrightarrow{\text{جمع فرایب و انبساط}} (n+1)(2n^2 + 7n + 2) \neq 0 \quad \text{ب) ۴}$$

$$n \neq -2, -1, -\frac{1}{2} \Rightarrow D_f = \mathbb{R} - \left\{ -2, -1, -\frac{1}{2} \right\}$$

$$n^3 - 2n^2 + 2n - 1 \neq 0 \xrightarrow{\text{جمع فرایب}} (n-1)(n^2 - n + 1) \neq 0 \quad \text{الف) ۲}$$

$$n \neq 1 \Rightarrow D_f = \mathbb{R} - \{1\}$$

$$\frac{n+2}{n^3 - 2n^2 + 2n - 1} > 0 \Rightarrow \begin{array}{c} + \\ - \\ + \end{array} \Rightarrow D_f = (-\infty, 2] \cup (1, +\infty)$$

$$n^3 - 5|n-1| - 2n + 5 \neq 0 \rightarrow$$

$$(n-1)^3 - 5|n-1| + 6 \xrightarrow{z=|n-1|} z^3 - 5z + 6 = (z-1)(z-2)$$

$$\Rightarrow |n-1| = 1 \Rightarrow n = 0, 2$$

$$\Rightarrow |n-1| = 2 \Rightarrow n = -1, 3$$

$$D_f = \mathbb{R} - \left\{ -1, 0, 2, 3 \right\}$$

$$|2n+1| - |n+2| \neq 0 \Rightarrow |2n+1| \neq |n+2| \xrightarrow{\text{توان ۲}} 4n^2 + 4n + 1 \neq n^2 + 4n + 4 \quad \text{الف) ۲}$$

$$\Rightarrow 3n^2 - 2n - 1 = 0 \Rightarrow (3n+1)(n-1) = 0 \Rightarrow D_f = \mathbb{R} - \left\{ -\frac{1}{3}, 1 \right\}$$

$$|2n+1| - |n+2| \geq 0 \Rightarrow |2n+1| \geq |n+2| \xrightarrow{\text{توان ۲}} 3n^2 - 2n - 1 \geq 0 \Rightarrow n \leq -\frac{1}{3} \text{ یا } n \geq 1$$

$$\Rightarrow \begin{array}{c} - \\ + \end{array} \Rightarrow D_f = (-\infty, -\frac{1}{3}] \cup [1, +\infty)$$

$$I: n > 0, 1 - \log_2 n > 0 \Rightarrow \log_2 n < 1 \Rightarrow n < 2 \quad II$$

$$I \cap II = D_f = (0, 2) \quad \text{۲}$$

$$I: n > 0, 1 - \log_2 \frac{1}{n} > 0 \Rightarrow \log_2 \frac{1}{n} < 1 \Rightarrow n > \frac{1}{2} \quad II$$

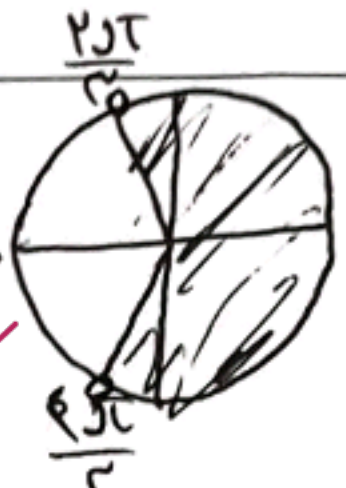
$$I \cap II = D_f = \left( \frac{1}{2}, +\infty \right)$$

$$2n-1 > 0 \Rightarrow n > \frac{1}{2} \text{ I, } \log_{\omega}^{2n-1} > 0 \Rightarrow 2n-1 > \omega \Rightarrow n > 1 \text{ II}$$

$$\log_{\frac{1}{\omega}} \log_{\omega}^{(2n-1)} \geq 0 \Rightarrow \log_{\omega}^{(2n-1)} \leq \frac{1}{\omega} \Rightarrow 2n-1 \leq \omega \Rightarrow n \leq 2 \text{ III}$$

$$I \cap II \cap III = D_f = (1, 2] \quad \checkmark$$

$$2 \cos n + 1 > 0 \Rightarrow \cos n > -\frac{1}{2}$$

$$\Rightarrow D_f = \mathbb{R} - \left[ 2k\pi + \frac{2\pi}{3}, 2k\pi + \frac{4\pi}{3} \right]$$


$$I \cap II = (-\infty, -1) \cup (1, +\infty) \quad \checkmark$$

$$\frac{n-1}{n+1} > 0 \Rightarrow +\frac{1}{2} - \frac{1}{2} \quad (-\infty, -1) \cup (1, +\infty) \text{ I}$$

$$\log \frac{n-1}{n+1} \geq 0 \Rightarrow \frac{n-1}{n+1} \geq 1 \Rightarrow \frac{-2}{n+1} \geq 0 \Rightarrow -\frac{2}{n+1} \geq 0 \quad (-\infty, -1) \text{ II}$$

چون دایره تابع مقادیر یک بازه تعیین شده پس تابع درجه اول است و ضرایب آن برابر است با

$$a + b = 0 \Rightarrow a = -b \Rightarrow -2n + b \geq 0 \Rightarrow \frac{b}{2} \geq n$$

$$n=2 \Rightarrow -2 \times 2 + b = 0 \Rightarrow b = 4 \quad \checkmark$$

چون دایره برابر با  $\mathbb{R}$  است پس  $D_f = \mathbb{R}$  و ضرایب آن برابر است با

$$n^2 + 2n + 2 - m^2 \geq 0 \Rightarrow b^2 - 4ac \leq 0 \Rightarrow 4 - 4 \times 1 \times (2 - m^2) \leq 0$$

$$\Rightarrow m^2 \leq 1 \Rightarrow -1 \leq m \leq 1 \quad \max n = 1 \quad \min = -1 \quad 1 - (-1) = 2 \quad \checkmark$$

$$f(n) \geq 0 \Rightarrow n^2 \leq 9 \Rightarrow -3 \leq n \leq 3 \text{ I}$$

$$\text{II}$$

در صورتی که  $n$  صحیح باشد  $[-n] + [n] = -1$

جواب باید منهای شود و دایره نیز در بین

$$D_f \supset \mathbb{Z} \cap [-2, 2] = \{-2, -1, 0, 1, 2\} \quad \checkmark$$