

به دلیل نبود فضا تقسیم الف سوال را در برگه ای

فرضا انجام دادیم

$$\frac{14n^3 - 10n^2 + 31n - 15}{-14n^3 + 14n^2} \mid \frac{n-1}{14n^2 - 14n + 15}$$

$$\begin{array}{r} -14n^3 + 31n - 15 \\ + 14n^3 - 14n^2 \\ \hline \end{array}$$

$$\begin{array}{r} 15n - 15 \\ - 15n + 15 \\ \hline 0 \end{array}$$

جمع = $(n-4)(n-10)$
 $n=4 \quad n=10$

$$\left\{ \begin{array}{l} n = \frac{4}{14} \\ n = 10 \end{array} \right.$$

$$\frac{14n^3 - n^2 - 11n - 1}{-14n^3 - 14n^2} \mid \frac{n+1}{14n^2 - 14n - 1}$$

$$\begin{array}{r} -14n^3 - 11n - 1 \\ + 14n^3 + 14n^2 \\ \hline \end{array}$$

$$n = \frac{-b \pm \sqrt{\Delta}}{2a}$$

$$n = \frac{1 \pm \sqrt{4 \times 14}}{4} = \frac{1 \pm \sqrt{56}}{4}$$

$$\Rightarrow \left\{ \begin{array}{l} n = \frac{1 + \sqrt{56}}{4} \\ n = \frac{1 - \sqrt{56}}{4} \end{array} \right.$$

الف) $\frac{n+1}{n^3 - 10n^2 + 11n - 1} \neq 0 \Rightarrow n^3 - 10n^2 + 11n - 1 \neq 0$ $n \neq 1, n \neq \frac{1}{10}$
 $D = \mathbb{R} - \{1, \frac{1}{10}, \frac{1}{11}, \frac{1}{101}\}$ $n \neq \frac{1}{10}, \frac{1}{11}, \frac{1}{101}$
 ب) $\frac{n+1}{n^3 - n^2 - 11n - 1} \neq 0 \Rightarrow n^3 - n^2 - 11n - 1 \neq 0$ $n \neq 1, n \neq -1$
 $D = \mathbb{R} - \{1, -1, \frac{1}{11}, \frac{1}{101}\}$ $n \neq \frac{1}{11}, \frac{1}{101}$

الف) $y = \frac{n+1}{n - \sqrt{13-2n}}$ $\Rightarrow 13-2n > 0 \Rightarrow 13 > 2n \Rightarrow \frac{13}{2} > n$
 $D = (-\infty, \frac{13}{2}) \cap (\mathbb{R} - \{1, -3\})$
 $D = (-\infty, \frac{13}{2}) - \{1, -3\}$
 ب) $y = \frac{n+1}{n - \sqrt{13-2n}}$ $\Rightarrow 13-2n > 0, n - \sqrt{13-2n} \neq 0 \Rightarrow n \neq \sqrt{13-2n} \Rightarrow n^2 \neq 13-2n$
 $D = [\frac{13}{2}, +\infty) - \{1, -3\}$

الف) $y = \frac{\sin n}{1 + \cos n} \Rightarrow 1 + \cos n \neq 0 \Rightarrow \cos n \neq -1 \Rightarrow n \neq \{2k\pi + \pi, 2k\pi + 3\pi\}$
 $D = \mathbb{R} - \{2k\pi + \pi, 2k\pi + 3\pi\}$
 ب) $\frac{\cos n + 1}{\sin n + 1} \Rightarrow \sin n + 1 \neq 0 \Rightarrow \sin n \neq -1 \Rightarrow n \neq \{2k\pi + \frac{3\pi}{2}, 2k\pi + \frac{5\pi}{2}\}$
 2) $\frac{\tan n + 1}{\cot n - 1} \Rightarrow \tan n \neq 1, \cot n \neq 1 \Rightarrow n \neq \{k\pi, k\pi + \pi\}$
 $D = \mathbb{R} - \{k\pi, k\pi + \pi\}$

الف) $\frac{n^2 - 5n + 4}{(n-1)(n-4)} > 0$ $n > 4$ یا $n < 1$
 ب) $\frac{n^2 - 4n + 4}{(n-1)(n-4)} < 0$ $1 < n < 4$
 2) $\frac{n^2 + 4n + 4}{(n+1)(n+4)} > 0$ $n > -1$ یا $n < -4$
 3) $\frac{n^2 - 7n + 4}{(n-1)(n-4)} \leq 0$ $1 \leq n \leq 4$

الف) $\frac{n^2 - 3n + 1}{n - 5} < 0 \Rightarrow \frac{(n-1)(n-2)}{n-5} < 0$ $(-\infty, 1) \cup (2, 5)$
 ب) $\frac{n^2 - 1}{n^2 - 4n + 4} > 0 \Rightarrow \frac{(n-1)(n+1)}{(n-2)^2} > 0$ $(-\infty, -1) \cup (1, +\infty)$

$$n^p - 1 \neq 0, \frac{n^p - 1}{n^p - 1} \geq 0$$

$$a) \sqrt{\frac{n^p - 1}{n^p - 1}} = y \Rightarrow y = \sqrt{\frac{(n-1)(n+1)}{(n-1)(n+1)}} \Rightarrow (n-1) > 0, n > 1$$

$$D = [1, +\infty)$$

$$b) \sqrt{\frac{n^p - 1}{n^p - 1}} \Rightarrow n^p - 1 \neq 0 \Rightarrow n^p \neq 1 \Rightarrow n \neq 1, n \neq -1$$

$$D = \mathbb{R} - \{1, -1\}$$

$$a) \log(n^p - 1) = y \Rightarrow n^p - 1 > 0 \Rightarrow n(n-1) > 0 \Rightarrow n < 0 \text{ or } n > 1 \Rightarrow D = (-\infty, 0) \cup (1, +\infty)$$

$$b) \log|1 - n^p| = y \Rightarrow |1 - n^p| > 0 \Rightarrow |n| - 1 > 0 \Rightarrow |n| > 1 \Rightarrow n > 1 \text{ or } n < -1$$

$$D = (-\infty, -1) \cup (1, +\infty)$$

$$c) \log \frac{n^p - 1}{n - 1} = y \Rightarrow \frac{n^p - 1}{n - 1} > 0 \Rightarrow (n-1)(n^{p-1} + \dots + 1) > 0$$

$$D = [1, +\infty) \cap (-\infty, 1] - \{1\} = \emptyset$$

$$\Rightarrow n^p - 1 > 0 \Rightarrow n > 1 \text{ or } n < -1$$

$$y = \frac{n^p - 1}{n^p + 1} = \frac{n(n-1)}{n(n+1)}$$

$n^p - 1$	+	+	0	-	+
$n^p + 1$	+	+	0	+	+
y	+	+	0	-	+

