

$$n^2 - 2n + 1 \neq 0 \Rightarrow n(n-2+1) \neq 0 \Rightarrow n(n-1) \neq 0 \Rightarrow \begin{cases} n \neq 0 \\ n \neq 1 \end{cases}$$

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

$$n^2 - n - 1 \neq 0 \Rightarrow n(n-1) \neq 0 \Rightarrow \begin{cases} n \neq 0 \\ n \neq 1 \end{cases} \Rightarrow D_f = \mathbb{R} - \{-1, 1\}$$

$$n - \sqrt{3-2n} \neq 0 \Rightarrow n^2 - |3-2n| \neq 0 \Rightarrow n^2 - |2-2n| \neq 0$$

$$n^2 \neq |2-2n| \Rightarrow \begin{cases} n \neq 1 \\ n \neq 2 \end{cases} \Rightarrow D_f = \mathbb{R} - \{1, 2\}$$

$$n - \sqrt{3n-2} \neq 0 \Rightarrow n^2 - |3n-2| \neq 0 \Rightarrow n^2 \neq |3n-2| \Rightarrow \begin{cases} n \neq 1 \\ n \neq 2 \end{cases} \Rightarrow D_f = \mathbb{R} - \{1, 2\}$$

$$\sin n + 1 \neq 0 \Rightarrow \sin n \neq -1 \Rightarrow \begin{cases} n \neq \frac{3\pi}{2} \\ n \neq \frac{7\pi}{2} \end{cases} \Rightarrow D_f = \mathbb{R} - \left\{ \frac{3\pi}{2}, \frac{7\pi}{2} \right\}$$

$$\cos n - 1 \neq 0 \Rightarrow \cos n \neq 1 \Rightarrow \begin{cases} n \neq 0 \\ n \neq 2\pi \end{cases} \Rightarrow D_f = \mathbb{R} - \{0, 2\pi\}$$

$$\sin n - \sqrt{2} \neq 0 \Rightarrow \sin n \neq \sqrt{2} \Rightarrow \begin{cases} n \neq \frac{\pi}{4} \\ n \neq \frac{3\pi}{4} \end{cases} \Rightarrow D_f = \mathbb{R} - \left\{ \frac{\pi}{4}, \frac{3\pi}{4} \right\}$$

$$\cot n - 1 \neq 0 \Rightarrow \cot n \neq 1 \Rightarrow \begin{cases} n \neq \frac{\pi}{4} \\ n \neq \frac{5\pi}{4} \end{cases} \Rightarrow D_f = \mathbb{R} - \left\{ \frac{\pi}{4}, \frac{5\pi}{4} \right\}$$

$$n^2 - 8n + 9 > 0 \Rightarrow (n-2)(n-4) \Rightarrow \begin{cases} n=2 \\ n=4 \end{cases} \Rightarrow D_f = (-\infty, 2) \cup (4, +\infty)$$

$$n^2 - 4n + 8 > 0 \Rightarrow (n-1)(n-8) \Rightarrow \begin{cases} n=1 \\ n=8 \end{cases} \Rightarrow D_f = (-\infty, 1) \cup (8, +\infty)$$

$$n^2 + 6n + 8 \geq 0 \Rightarrow (n+1)(n+8) \Rightarrow \begin{cases} n=-1 \\ n=-8 \end{cases} \Rightarrow D_f = (-\infty, -8] \cup [-1, +\infty)$$

$$n^2 - 4n + 6 \leq 0 \Rightarrow (n-1)(n-6) \Rightarrow \begin{cases} n=1 \\ n=6 \end{cases} \Rightarrow D_f = [1, 6]$$

$$n^2 - 4n + 2 < 0 \Rightarrow (n-1)(n-2) \Rightarrow \begin{cases} n=1 \\ n=2 \end{cases} \Rightarrow D_f = (-\infty, 1) \cup (2, +\infty)$$

$$n^2 - 1 \geq 0 \Rightarrow n^2 \geq 1 \Rightarrow \begin{cases} n=1 \\ n=-1 \end{cases} \Rightarrow D_f = (-\infty, -1] \cup [1, +\infty)$$

$$\frac{n^2 - f(n+1)}{n^2 - 1} \geq 0 \Rightarrow \begin{cases} n^2 - f(n+1) \geq 0 \Rightarrow (n-1)(n-3) \\ n^2 - 1 \neq 0 \Rightarrow n^2 \neq 1 \Rightarrow n \neq \pm 1 \end{cases} \begin{matrix} \{n=1 \\ n=3 \end{matrix} \quad \text{(الف)}$$

$$\frac{1}{-1} \frac{3}{-1} \Rightarrow D_f = [3, +\infty) \quad \text{(ب)}$$

$$n^2 - 1 \neq 0 \Rightarrow n^2 \neq 1 \Rightarrow \begin{cases} n \neq 1 \\ n \neq -1 \end{cases} \Rightarrow D_f = \mathbb{R} - \{1, -1\}$$

$$n^2 - 3n > 0 \Rightarrow n(n-3) > 0 \Rightarrow \begin{cases} n \neq 0 \\ n \neq 3 \end{cases} \Rightarrow \frac{0}{+1} \frac{3}{-1} \Rightarrow \text{(الف)}$$

$$D_f = (-\infty, 0) \cup (3, +\infty)$$

$$19 - n^2 > 0 \Rightarrow 19 > n^2 \Rightarrow 4 > |n| \rightarrow 4 > n > -4$$

$$\frac{|n| - 4}{-1} > 0 \Rightarrow |n| > 4 \Rightarrow \begin{cases} n > 4 \\ n < -4 \end{cases} \quad |n| - 4 \neq 1 \Rightarrow |n| \neq 5 \Rightarrow n \neq \pm 5 \Rightarrow \text{(الف)}$$

$$\frac{+1}{-1} \frac{-1}{-1} \frac{+1}{-1} \frac{-1}{-1} \Rightarrow D_f = (-\infty, -4) \cup (-3, -2) \cup (2, 3) \cup (4, +\infty)$$

$$n^2 + n \neq 0 \Rightarrow n(n+1) \neq 0 \Rightarrow \begin{cases} n \neq 0 \\ n \neq -1 \end{cases} \Rightarrow \frac{-1}{+1} \frac{0}{-1} \Rightarrow D_f = (-\infty, -1) \cup (0, +\infty)$$

	-1	0
$n^2 - n$	+	+
$n^2 + n$	+	-
$P(n)$	+	-

طبقاً منحنی، $f(n)$ را با $f(n)$ در نقطه $n = \pm 2$ قطع می‌کند.

$$\frac{n - f(n)}{f(n)} \geq 0 \quad , \quad f(n) \neq 0$$

$$f(n) = n^2 - 2 \neq 0 \rightarrow n \neq \pm \sqrt{2}$$

$$\frac{-1}{-1} \frac{-\sqrt{2}}{+1} \frac{\sqrt{2}}{+1} \frac{2}{-1} \Rightarrow$$

$$\frac{-(n^2 - n - 2)}{n^2 - 2} = \frac{-(n-2)(n+1)}{n^2 - 2}$$

$$n \neq \pm \sqrt{2}$$

$$n = -1, n = +2$$

$$D_f = [-1, \sqrt{2}) \cup (\sqrt{2}, 2]$$



