

$$n = \begin{cases} 3y-1 & y \geq 0 \rightarrow 3y = n+1 \rightarrow y = \frac{n+1}{3}, n \geq -1 \\ -y^2 & y > 1 \rightarrow y = \sqrt{-n}, n < -1 \end{cases}$$

تابع نیست
به ازای $y=2$

$$\sqrt{\frac{nf(n-2)}{f(n)}} \rightarrow -2, \omega, V$$

$$f(n) \rightarrow -2, 3, \omega$$

$$\begin{array}{c} -2 \quad -2 \quad 0 \quad 3 \quad \omega \quad V \\ | \quad - \quad + \quad - \quad + \quad - \quad + \end{array}$$

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

$$f(n) = \frac{2n^2 - 3n + 2}{n^3 - 2n}$$

$$الف) D_f \Rightarrow n^3 - 2n \neq 0 \rightarrow n(n-2)(n+2) \neq 0$$

$$D_f = \mathbb{R} - \{-2, 0, 2\}$$

$$ب) \sqrt{\frac{2n^2 - 3n + 2}{n^3 - 2n}} \rightarrow \Delta < 0$$

$$\begin{array}{c} -2 \quad 0 \quad 2 \\ | \quad - \quad + \quad - \quad + \end{array}$$

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

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

$$\begin{array}{c} -2 \quad 2 \\ | \quad - \quad + \quad + \end{array} \quad D_f = (-2, 2) \cup (2, +\infty)$$

$$D_f = \mathbb{R} - \{2, -2\}$$

$$ب) y = \frac{2n^2 + 1}{2 - 2[-n]} \rightarrow 2 - 2[-n] \neq 0 \rightarrow [-n] \neq 1 \rightarrow 1 \leq -n < 2$$

$$-2 < n < -1$$

$$الف) f(n) = \frac{\sqrt{n(n^2-1)}}{\sqrt{|n|+n}} \rightarrow n(n-1)(n+1) \geq 0$$

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

$$\begin{array}{c} 0 \\ | \quad - \quad + \end{array} \quad ② \quad ① \cap ② \rightarrow D_f = [1, +\infty)$$

$$ب) f(n) = \frac{\sqrt{|n-2|-n^2}}{\sqrt{|n|-1}} \rightarrow |n-2|-n^2 \geq 0$$

$$|n|-1 \rightarrow |n| \neq 1 \rightarrow n \neq \pm 1$$

$$\begin{array}{l} n > 2 \rightarrow -n^2 + n - 2 \rightarrow \Delta < 0 \\ n < 2 \rightarrow -n^2 - n + 2 = -(n+2)(n-1) \end{array}$$

$$D_f = [-2, -1) \cup (-1, 1) \cup (1, 2)$$

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

الف) $y = \sqrt{(x-2)[x-3]}$ $(x-2)[x-3] \geq 0$ $\begin{array}{c|ccc|c} & 2 & 3 & & \\ \hline & + & 0 & + & \end{array}$

$D_f = \mathbb{R}$

ب) $y = \sqrt{|x-1|[x-3]}$ $|x-1|[x-3] \geq 0 \rightarrow \begin{array}{c|ccc|c} & 1 & 3 & & \\ \hline & - & 0 & + & \end{array}$

$D_f = [3, +\infty) \cup \{1\}$

$y = \frac{1}{||x-2|-1|-k}$ $||x-2|-1| = k \begin{cases} |x-2|-1 = k \\ |x-2|-1 = -k \end{cases}$

$|x-2| = k+1, |x-2| = -k+1$

$k > 1 \rightarrow 1-k < 0 \times$

$k+1 \rightarrow \text{مثبت}$

$0 \leq k < 1 \rightarrow \frac{k+1}{1-k} \rightarrow \text{مثبت}$

$k=1 \rightarrow |x-2|=1+1 \rightarrow x=3, x=0$
 $|x-2|=1-1=0 \rightarrow x=2$

$K=1$

$f(x) = \frac{\frac{x^2+3x+2}{x^2+3x+2}}{\frac{x+1}{x-1}}$

$x-1 \neq 0 \rightarrow x \neq 1$

$x^2+3x+2 \neq 0 \rightarrow x \neq -1, -2 \rightarrow x \neq -1, -2, 1$

$\frac{x+1}{x-1} \neq 0 \rightarrow x \neq 1, -1$

$n=3$

$x^2 - 4x + 9 = (x-3)^2 \rightarrow \text{دایره } (x=3) \text{ شعاع } 1$

$y = \log_{n+1} \log_n \frac{1}{x}$

$x > 0, x \neq 1$

$n+1 > 0 \rightarrow n > -1, n \neq 0$

①

$\log \frac{1}{x} = \log x^{-1} \rightarrow -\log x > 0 \rightarrow \log x < 0 \rightarrow 0 < x < 1$

① ② $\Rightarrow D_f = (0, 1)$

$-1 \leq 3x^2-1 \leq 1 \rightarrow -1 \leq 3x^2 \leq 1 \rightarrow x^2 \leq \frac{1}{3} \rightarrow x \in \mathbb{R} \text{ ①}$

$x^2 \leq \frac{1}{3} \rightarrow \frac{-1}{\sqrt{3}} \leq x \leq \frac{1}{\sqrt{3}} \text{ ②}$

① ② $\rightarrow D_f = \left[-\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}}\right]$