

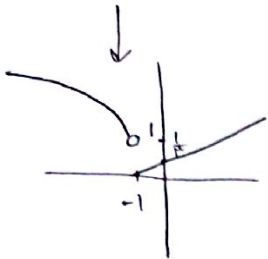
$$u \begin{cases} ry-1 & y \geq 0 \\ -y^r & y > 1 \end{cases}$$

$$u = ry-1 \quad y = \frac{u+1}{r}$$



$$u = -y^r \quad y = \sqrt[r]{-u}$$

تابع است



$$g(u) = \frac{\sqrt{u f(u-r)}}{f(u)}$$

$$F(u) \begin{cases} 0 \\ -\varepsilon, r, \infty \end{cases}$$

$$f(u-r) \begin{cases} 2 \\ -r, \infty, \vee \end{cases}$$

$$u \begin{cases} 2 \\ - \end{cases}$$

$$\begin{matrix} -\varepsilon & -r & 0 & r & \infty & \vee \\ -\frac{1}{\varepsilon} & +\frac{1}{\varepsilon} & -\frac{1}{\varepsilon} & +\frac{1}{\varepsilon} & -\frac{1}{\varepsilon} & + \end{matrix}$$

$$Dg = (-\varepsilon, -r] \cup [0, r) \cup [r, +\infty)$$

$$f(u) = \frac{ru^r - ru + r}{u^r - \varepsilon u}$$

$$u^r - \varepsilon u = 0 \quad u(u-r)(u+r) = 0 \quad u \begin{cases} -r \\ 0 \\ +r \end{cases}$$

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

$$\frac{ru^r - ru + r}{u^r - \varepsilon u} \rightarrow \text{مقام صفت} \quad \Delta < 0$$

$$D \sqrt{f} = \begin{cases} u^r - \varepsilon u > 0 \\ -r & 0 & r \\ -\frac{1}{\varepsilon} & +\frac{1}{\varepsilon} & + \end{cases} \quad D = (-r, 0) \cup (r, +\infty)$$

$$y = \sqrt{\frac{u-r}{u^r - ru - \varepsilon}} \rightarrow \frac{(u^r - \varepsilon)(u^r + r)}{(u-r)(u+r)(u^r + r)}$$

$$\begin{matrix} -r & * \\ -\frac{1}{\varepsilon} & +\frac{1}{\varepsilon} & + \end{matrix}$$

$$D_f = (-r, r) \cup (r, +\infty)$$

$$y = \frac{ru^r + 1}{\varepsilon - r[-u]}$$

$$\varepsilon - r[-u] = 0$$

$$r[-u] = r$$

$$[-u] = r$$

$$r \leq -u < r$$

$$-r < u \leq -r$$

$$D = (-r, -r]$$

$$y = \frac{\sqrt{u(u^r-1)}}{\sqrt{|u|+u^r}}$$

$$u(u^r-1) \geq 0$$

$$\begin{matrix} -1 & 0 & 1 \\ -\frac{1}{\varepsilon} & +\frac{1}{\varepsilon} & + \end{matrix}$$

$$|u|+u^r > 0$$

$$u > 0$$

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

$$y = \frac{\sqrt{|u-r|-u^r}}{|u|-1}$$

$$|u-r|-u^r \geq 0$$

$$|u-r| \geq u^r$$

$$\begin{cases} u > r & u^r - u + r \leq 0 \\ u < r & u^r + u - r \leq 0 \end{cases}$$

$$|u| \neq 1$$

$$u \neq \pm 1$$

$$D_f = [-r, 1) - \{-1\}$$

$$(n-2)(n-1)$$

$$(n-2)(n-1) \geq 0$$

$$n-2 < 0 \rightarrow [n-2] < 0 \rightarrow \checkmark$$

$$n-2 > 0 \rightarrow [n-2] \geq 0 \rightarrow \checkmark \quad D = \mathbb{R}$$

$$y = \sqrt{|n-1|} [n-2]$$

$$|n-1| [n-2] \geq 0$$

در صورتی که $n=1$ صحیح است

$$[n-2] \geq 0 \quad D = [2, +\infty) \cup \{1\}$$

$$n \geq 1$$

$$y = \frac{1}{|n-1|-1-k}$$

$$|n-1|-1 = k \quad \begin{cases} n > 2 & n \leq 1 \\ n-1 = k+1 & \begin{cases} n > 2 & n \geq k+2 \\ n < 2 & n = 1-k \end{cases} \\ |n-1|-1 = -k & \begin{cases} n > 2 & n \geq 2-k \\ n < 2 & n \leq 1+k \end{cases} \end{cases}$$

در بعضی موارد باید بررسی کرد که آیا k صحیح است یا نه

$$k = ? \quad k=1 \quad D = \mathbb{R} - \{0, 1, 2\}$$

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

$$n^2+n+1 \geq 0$$

$$n \in [-1, -1]$$

$$-1, -1, -1$$

$$n=1$$

$$\frac{n+1}{n-1} = 0$$

$$n \in [-1, +1]$$

در صورتی که n صحیح است

$$n^2-2nn+2n=0$$

$$n^2-4n+4 \rightarrow (n-2)^2$$

$$y = \log \log \frac{1}{n}$$

$$n > 0 \quad n \neq 1$$

$$n+1 > 0 \quad n+1 \neq 1$$

$$\log \frac{1}{n} > 0 \rightarrow 0 < n < 1$$

$$D = (0, 1)$$

$$D_{f(n)} = [-\infty, \infty] \rightarrow f(-\infty) \leq f(x)$$

$$D_{f(n^2-1)}$$

$$-\infty \leq n^2-1 \leq \infty \rightarrow n^2 \leq \infty$$

$$n^2 \leq \frac{\infty}{n}$$

$$D_{f(n^2-1)} = \left[\frac{-2\sqrt{n^2-1}}{n}, \frac{2\sqrt{n^2-1}}{n} \right]$$

$$\frac{-2}{\sqrt{n^2-1}} \leq n \leq \frac{2}{\sqrt{n^2-1}}$$