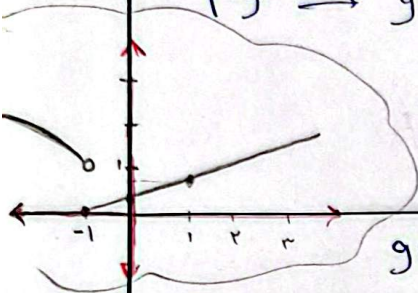


$$x = \begin{cases} y-1 \rightarrow y = \frac{x+1}{2} \geq 0 \rightarrow x \geq -1 \\ -y^2 \rightarrow y^2 = -x \rightarrow y = \pm \sqrt{-x} \rightarrow y > 1 \rightarrow \sqrt{-x} > 1 \rightarrow -x > 1 \rightarrow x < -1 \end{cases}$$

که فقط (۱) و (۲) $I: (-\infty, -1) \rightarrow II: (-1, \infty)$ $I \cap II: \emptyset$

→ تعاد → تابع مستقیم



$$g(x) = \sqrt{\frac{x f(x-2)}{f(x)}} \geq 0 \rightarrow x f(x-2) \geq 0$$

x | -1 -2 0 2 5 7
 $-$ $+$ $-$ $+$ $-$ $+$ $-$
 $D_f: (-\infty, -2] \cup [0, 2) \cup [7, +\infty)$

الف) $x^2 - 2x \neq 0 \rightarrow x(x-2) \neq 0 \rightarrow D_f: \mathbb{R} - \{0, 2\}$

$\Delta = 4 - 4(2)(2) < 0$ $\rightarrow$ $\Delta < 0$ $\rightarrow$ $x^2 - 2x + 2 > 0$ $\rightarrow$ $x > 0$ $\rightarrow$ $D_f: (-2, 0) \cup (2, +\infty)$

الف) $y = \sqrt{\frac{x-2}{x^2-2x-2}} \geq 0 \rightarrow x-2 \geq 0 \rightarrow x \geq 2$ $\rightarrow$ $D_f: (-2, +\infty) - \{2\}$

ب) $x-2[-x] \neq 0 \rightarrow x \neq -x[-2] \rightarrow [x] \geq 2 \rightarrow 2 \leq x < 3 \rightarrow x-1 \rightarrow -2 \geq x > -3$ $D_f: \mathbb{R} - (-3, 2]$

الف) $f(x) = \sqrt{x(x^2-1)} \geq 0 \rightarrow x \geq 0$ $\rightarrow$ $D_f: [-1, 0] \cup [1, +\infty)$

ب) $f(x) = \sqrt{|x-1|-x^2} \geq 0 \rightarrow |x-1| \geq x^2 \rightarrow x^2 - |x-1| \leq 0$ $\rightarrow$ $D_f: I \cap II: [-2, 1) - \{-1\}$

x | -2 1
 $-$ $+$ $-$
 $I: [-2, 1]$

$$a) y = \sqrt{(n-r)([n-r])} \geq 0 \quad \begin{array}{c|ccc} n & r^* & r & \\ \hline & + & 0 & + \end{array} \quad D_f: \mathbb{R}$$

$$b) y = \sqrt{(n-1)([n-r])} \geq 0 \quad \begin{array}{c|ccc} n & 1^* & r & r \\ \hline & - & 0 & + \end{array} \quad D_f: [r, +\infty) \cup \{1\}$$

$$|n-r|-1-k=0 \rightarrow \begin{cases} n-r-1-k=0 \rightarrow n=r+k \\ -n+r-1-k=0 \rightarrow n=1-k \end{cases}$$

$$II: n=0, r, \varepsilon, \quad h=-1 \leftarrow k+r=-h+1 \leq I: n=0, r, \varepsilon, \quad h=1 \leftarrow k+1=-k+r$$

$$-|n-r|+1-k=0 \rightarrow \begin{cases} n-r+1-k \rightarrow n=r-k \\ -n+r+1-k \rightarrow n=1+k \end{cases} \quad I \cup II: k=\pm 1$$

$$f(n) = \frac{n^r + r n + r}{n^r + r n + r} \rightarrow \begin{array}{l} \frac{n+1}{n-1} \neq 0 \rightarrow (-1) \\ \frac{n+1}{n-1} \neq 0 \rightarrow (-1) \\ \frac{n+1}{n-1} \neq 0 \rightarrow (1) \end{array} \quad D_f: \mathbb{R} - \{-r, -1, 1\} \rightarrow n=r$$

$$\begin{aligned} n^r - r(r)n + r(r) &= 0 \\ n^r - 4n + 4 &= 0 \\ (n-r)^2 &= 0 \rightarrow n=r \\ \Delta &= 0 \rightarrow \text{ریشه مضاعف} \end{aligned}$$

$$y = \log_{n+1} \log_n \frac{1}{r} \quad D_f: (0, 1)$$

$$\begin{cases} n+1 > 0 & n+1 \neq 1 \rightarrow n > -1, n \neq 0 \\ n > 0 & n \neq 1 \end{cases}$$

$$\log_n \frac{1}{r} > 0 \rightarrow \frac{1}{r} > n^0 \rightarrow \frac{1}{r} > 1 \rightarrow 0 < n < 1$$

$$\begin{aligned} -2 \leq n \leq 2 & \xrightarrow{f(n^r-1)} -2 \leq r n^r - 1 \leq 2 \xrightarrow{+1} -1 \leq r n^r \leq 3 \rightarrow n^r \leq \frac{3}{r} \\ \pm \sqrt{} & \rightarrow \frac{-r}{\sqrt{r}} \leq n \leq \frac{r}{\sqrt{r}} \rightarrow \frac{-r\sqrt{r}}{r} \leq n \leq \frac{r\sqrt{r}}{r} \end{aligned}$$

$$D_f: \left[\frac{-r\sqrt{r}}{r}, \frac{r\sqrt{r}}{r} \right]$$