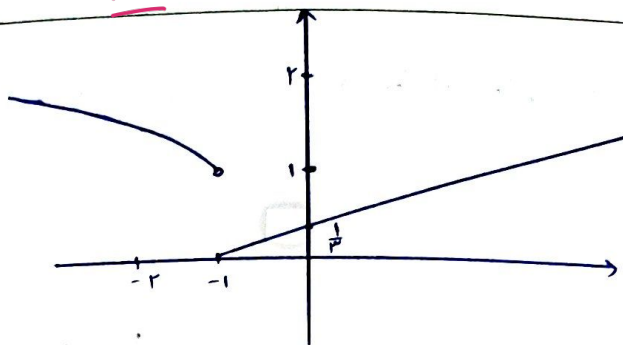
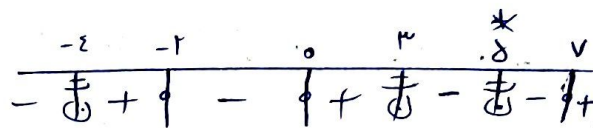


$$x = \begin{cases} 3x-1 & x \geq 0 \\ -x^2 & x < 0 \end{cases} \rightarrow \begin{cases} y = \frac{x+1}{x} & x \geq 0 \\ y = \sqrt{-x} & x < 0 \end{cases}$$

تایید است ✓



$$g(x) = \sqrt{\frac{x f(x-1)}{f(x)}} \rightarrow \frac{x f(x-1)}{f(x)} \geq 0$$



$$\rightarrow D_f = (-2, -1] \cup [0, 2) \cup [4, +\infty) \checkmark$$

فقط خطوط باشد که $x=4$ در دامنه است و $x=4$ در دامنه است $f(x-1)$ نیست که در دامنه است $f(x)$ است

$$f(x) = \frac{x^2 - 2x + 2}{x^2 - 2x} \rightarrow x^2 - 2x \neq 0 \quad x(x-2)(x+2) \neq 0 \rightarrow D_f = \mathbb{R} - \{0, \pm 2\}$$

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

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

$$f(x) = \sqrt{\frac{x-2}{x^2 - 2x^2 - 1}} \rightarrow \frac{x-2}{x^2 - 2x^2 - 1} \geq 0 \rightarrow \frac{-2}{-2} + \frac{2}{2} + \rightarrow D_f = (-2, +\infty) - \{2\}$$

$$y = \frac{x^2 + 1}{x^2 - 2} \rightarrow x^2 - 2 \neq 0 \rightarrow x^2 \neq 2 \rightarrow x \neq \pm \sqrt{2} \rightarrow D_f = \mathbb{R} - \{\pm \sqrt{2}\}$$

$$f(x) = \sqrt{\frac{x(x^2 - 1)}{\sqrt{|x| + x}}} \rightarrow \begin{cases} x + |x| > 0 \rightarrow x > 0 \\ x(x^2 - 1) \geq 0 \rightarrow \frac{-1}{-1} + \frac{0}{0} - \frac{1}{1} + \end{cases} D_f = [1, +\infty) \checkmark$$

$$f(x) = \frac{\sqrt{|x-1| - x^2}}{|x| - 1} \rightarrow \begin{cases} |x-1| - x^2 \geq 0 \rightarrow [-1, 1] \\ |x| - 1 \neq 0 \rightarrow x \neq \pm 1 \end{cases} \rightarrow D_f = [-1, 1] - \{\pm 1\}$$

$$\text{الف) } y = \sqrt{(n-r)[n-r]} \rightarrow (n-r)[n-r] \geq 0 \xrightarrow{\text{مطلوب}} D_f = \mathbb{R} \checkmark$$

(r)

$$\text{ب) } y = \sqrt{|n-1|[n-r]} \rightarrow \underbrace{|n-1|[n-r]}_{\geq 0} \geq 0 \rightarrow D_f = [1, +\infty) \cup \{1\} \checkmark$$

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$$y = \frac{1}{||n-r|-1|-k} \rightarrow ||n-r|-1|-k \neq 0 \rightarrow ||n-r|-1| \neq k$$

(r)

$$\rightarrow |n-r|-1 \neq \pm k \xrightarrow{k \geq 0} \begin{cases} |n-r| \neq k+1 \xrightarrow{k \geq 0} \text{مطلوب} \\ |n-r| \neq 1-k \xrightarrow{k \geq 0} \text{مطلوب} \end{cases} \rightarrow 1-k=0 \rightarrow \textcircled{k=1} \checkmark$$

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$$f(n) = \frac{\frac{n^2+3n+2}{n^2+3n+2}}{\frac{n+1}{n-1}} \rightarrow \begin{cases} n^2+3n+2 \neq 0 \rightarrow \begin{cases} n \neq -1 \\ n \neq -2 \end{cases} \\ n-1 \neq 0 \rightarrow n \neq 1 \\ \frac{n+1}{n-1} \neq 0 \rightarrow n \neq -1 \end{cases} \rightarrow \textcircled{n=2} \checkmark$$

(r)

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$$n^2 - 2nm + 2n = 0 \rightarrow n^2 - 2m + 2 = 0 \rightarrow (n-1)^2 = 0 \rightarrow \textcircled{n=1} \checkmark$$

$$y = \log_{n+1} \log \frac{1}{n} \rightarrow \begin{cases} n > 0 \\ n \neq 1 \\ \log \frac{1}{n} > 0 \rightarrow \log \frac{n}{1} < 0 \rightarrow 0 < n < 1 \\ n+1 > 0 \rightarrow n > -1 \\ n+1 \neq 1 \rightarrow n \neq 0 \end{cases} \rightarrow D_f = (0, 1) \checkmark$$

(r)

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$$D_{f(n)} = [-\delta, r] \rightarrow D_{f(rn^r-1)} = ?$$

(r)

$$-\delta \leq rn^r-1 \leq r \rightarrow -r \leq rn^r \leq r+1 \rightarrow \frac{-r}{r} \leq n^r \leq \frac{r+1}{r} \rightarrow n^r \leq \frac{r}{r} \rightarrow \frac{-r}{\sqrt{r}} \leq n \leq \frac{r}{\sqrt{r}} \rightarrow D_f = \left[-\frac{r}{\sqrt{r}}, \frac{r}{\sqrt{r}}\right] \checkmark$$

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