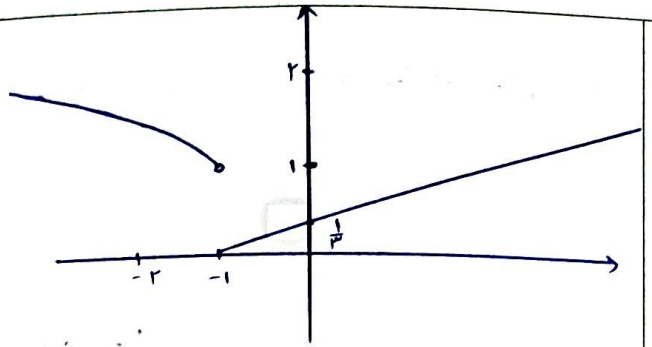
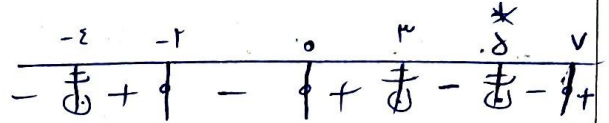


$$x = \begin{cases} 3x-1 & x \geq 0 \\ -x^2 & x < 0 \end{cases} \rightarrow \begin{cases} y = \frac{x+1}{x} & x \geq 0 \\ y = \sqrt{-x} & x < 0 \end{cases}$$

تایید است



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



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

$$f(x) = \frac{x^2 - x + 2}{x^2 - x} \rightarrow x^2 - x \neq 0 \rightarrow x(x-1) \neq 0 \rightarrow D_f = \mathbb{R} - \{0, 1\}$$

$$g(x) = \sqrt{\frac{x^2 - x + 2}{x^2 - x}} \rightarrow \frac{x^2 - x + 2}{x^2 - x} \geq 0 \rightarrow \frac{-1}{-1} + \frac{0}{0} - \frac{2}{1} +$$

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

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

$$y = \frac{x^2 + 1}{x^2 - 1} \rightarrow x^2 - 1 \neq 0 \rightarrow x^2 + 1 \neq 0 \rightarrow x^2 \neq -1 \rightarrow x \neq \pm i$$

$$\rightarrow D_f = \mathbb{R} - \{i, -i\}$$

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

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

$$\text{الف) } y = \sqrt{(n-2)[n-2]} \rightarrow (n-2)[n-2] \geq 0 \xrightarrow{\text{معاينة}} D_f = \mathbb{R}$$

$$\text{ب) } y = \sqrt{|n-1|[n-2]} \rightarrow \underbrace{|n-1|[n-2]}_{\geq 0} \geq 0 \rightarrow D_f = [2, +\infty) \cup \{1\}$$

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

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

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

$$n^2 - 2nm + 3n = 0 \rightarrow n^2 - 7m + 9 = 0 \rightarrow (n-3)^2 = 0 \rightarrow \textcircled{n=3}$$

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

$$D_{f(n)} = [-2, 2] \rightarrow D_{f(rn^2-1)} = ?$$

$$-2 \leq rn^2-1 \leq 2 \rightarrow -1 \leq rn^2 \leq 3 \rightarrow \frac{-1}{r} \leq n^2 \leq \frac{3}{r} \rightarrow n^2 \leq \frac{3}{r} \rightarrow \frac{-\sqrt{3}}{\sqrt{r}} \leq n \leq \frac{\sqrt{3}}{\sqrt{r}} \rightarrow D_f = \left[-\frac{\sqrt{3}}{\sqrt{r}}, \frac{\sqrt{3}}{\sqrt{r}}\right]$$