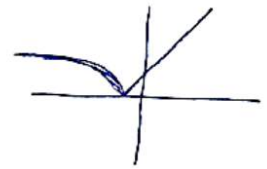


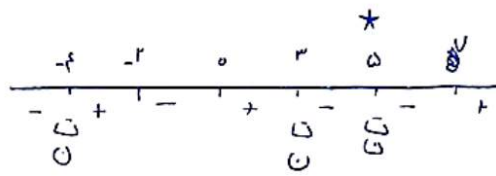
تمام حتماً زهرایه دانیان

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



اتابع است

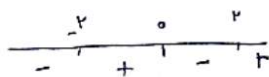
2 $\begin{aligned} x-2 &= -f \rightarrow x = -f \\ x-2 &= f \rightarrow x = f \\ x-2 &= \infty \rightarrow x = \infty \end{aligned}$



$D_f = (-f, -2] \cup [0, f) \cup [f, \infty)$

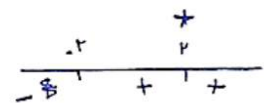
3 الف $x^2 - 5x \neq 0 \rightarrow x(x-5) \neq 0 \rightarrow \mathbb{R} - \{0, 5\}$

ب $\frac{x^2 - 5x + 2}{x(x+2)(x-2)} \rightarrow \Delta < 0$



$(-2, 0) \cup (2, \infty)$

4 الف $\sqrt{\frac{x-2}{x^2 - 2x - 1}} \rightarrow x^2 - 2x - 1 \rightarrow (x-1)^2 - 2 \rightarrow (x-1-\sqrt{2})(x-1+\sqrt{2})$
 $\rightarrow x^2 - 2x - 1 \rightarrow x = 1 \pm \sqrt{2}$



$D = (-\infty, \infty) - \{1 \pm \sqrt{2}\}$

5 ب $\frac{x^2 + 1}{x^2 - 2x} \rightarrow [-x] \neq 0 \rightarrow -x \neq [2, 3] \rightarrow x \in (-\infty, -2) \cup (-3, 0)$

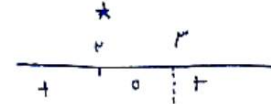
$\mathbb{R} - (-3, -2]$

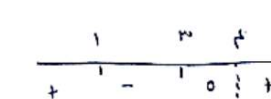
6 الف $\frac{\sqrt{x(x+1)(x-1)}}{\sqrt{|x|+x}} \rightarrow \frac{-1}{-1} + \frac{0}{0} + \frac{1}{1} \rightarrow \frac{-1}{-1} + \frac{1}{1} \rightarrow 2$
 $\frac{\sqrt{|x|+x}}{\sqrt{|x|+x}} \rightarrow |x|+x > 0 \rightarrow D_f = \mathbb{R}^+$

$[0, \infty)$

7 ب $\frac{\sqrt{|x-2| - x^2}}{|x|-1} > 0 \rightarrow \frac{-x^2 - x + 2}{-(x^2 + x - 2)} \rightarrow \frac{-x^2 - x + 2}{-(x+2)(x-1)} \rightarrow \frac{-1}{-1} + \frac{2}{1} \rightarrow 3$
 $|x|-1 \rightarrow \mathbb{R} - \{1\}$

$D = [-2, 1) - \{1\}$

4 الف , $\sqrt{(n-r)[n-r]} \rightarrow$  $\rightarrow \boxed{D_c = \mathbb{R}}$

ب , $\sqrt{|n-1|}[n-r] \rightarrow$  $\rightarrow \boxed{D_f: (-\infty, 1] \cup [r, +\infty)}$

5

ا $\frac{n^r + r n + r}{n^r + r n + r} \rightarrow (n+1)(n+r)$
 $\frac{n+1}{n-1} \rightarrow \boxed{D_f = \mathbb{R} - \{-r, \pm 1\}} \rightarrow_{\mathbb{R}} = -r$

$n^r + r n - 9 = 0 \rightarrow \Delta > 0 \rightarrow \boxed{[2]}$

9 $y = \log_{n+1} \log_n \frac{1}{x} \rightarrow n > 0$
 $\log_n \frac{1}{x} > 0 \rightarrow n < 1$
 $\left. \begin{array}{l} n > -1 \\ n < 1 \end{array} \right\} \boxed{(0, 1)}$

10 $-1 \leq n^r - 1 \leq 1 \rightarrow -r \leq n^r \leq r \rightarrow \frac{-r}{r} \leq n^r \leq \frac{r}{r}$

$-\sqrt{\frac{r}{r}} \leq n^r \leq \sqrt{\frac{r}{r}} \rightarrow \boxed{\left[-\frac{1}{\sqrt{r}}, \frac{1}{\sqrt{r}}\right]}$