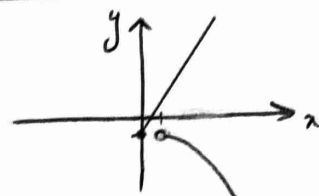


اتباعکس رابطه را
 رسم کنیم $\rightarrow y = \begin{cases} 3x-1 & x \geq 0 \\ -x^2 & x < 0 \end{cases}$



حلول این رابطه یک است در نیمه فرد این رابطه یک تابع است

$x f(x-2) = 0 \rightarrow x = 1, \infty, \vee, -2$

$f(x) = 0 \rightarrow x = -2, 3, \infty$

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

x	-2	-2	1	3	∞	$\vee$
$f(x)$	$-\frac{1}{2} +$	$+$	$+$	$+$	$+$	$+$

$\hookrightarrow x \in (-2, -2] \cup (1, 3) \cup [\vee, +\infty)$

$f(x) = \sqrt{\frac{2x^2-3x+2}{x^3-4x}}$

$\hookrightarrow \frac{2x^2-3x+2}{x^3-4x} \geq 0 \rightarrow \Delta(0, 9) = 0 \rightarrow$ است $\oplus$

x	-2	0	2
$f(x)$	$-\frac{1}{2} +$	$+$	$+$

$\hookrightarrow x \in (-2, 0) \cup (2, +\infty)$

$f(x) = \frac{2x^2-3x+2}{x^3-4x}$

$\hookrightarrow x^3-4x \neq 0 \rightarrow x(x-2)(x+2) \neq 0$

$\hookrightarrow x \neq 0, 2, -2$

$\hookrightarrow x \in \mathbb{R} - \{0, 2, -2\}$

$y = \frac{2x^2+1}{x-2[-x]}$

$\hookrightarrow x-2[-x] \neq 0$

$\hookrightarrow x \neq 2[-x]$

$\hookrightarrow 2 \neq [-x] \rightarrow x \in \mathbb{R} - (-2, -1]$

$y = \sqrt{\frac{x-2}{x^2-2x^2-1}}$

$\hookrightarrow \frac{x-2}{x^2-2x^2-1} \geq 0 \rightarrow \begin{cases} x^2-2x^2-1 = 0 \rightarrow (x^2-2)(x^2+1) = 0 \\ \hookrightarrow x = \pm 2 \end{cases}$

x	-2	2
$f(x)$	$-\frac{1}{2} +$	$+$

$\hookrightarrow x \in (-2, 2) \cup (2, +\infty)$

$f(x) = \frac{\sqrt{x^2-1-x^2}}{|x|-1}$

$\rightarrow |x^2-1-x^2| \geq 0 \rightarrow -x^2+1-x^2 \geq 0 \rightarrow 1-2x^2 \geq 0 \rightarrow x^2 \leq \frac{1}{2} \rightarrow x \in [-\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}]$

$\rightarrow |x|-1 \neq 0 \rightarrow x \neq 1, -1$

$\textcircled{1} \textcircled{2} \rightarrow x \in [-\frac{1}{\sqrt{2}}, -1) \cup (-1, \frac{1}{\sqrt{2}}]$

$f(x) = \frac{\sqrt{x(x^2-1)}}{\sqrt{|x|-1}}$

$\rightarrow x(x^2-1) \geq 0 \rightarrow \begin{cases} x \geq 0 \rightarrow x^2-1 \geq 0 \rightarrow x \in [1, \infty) \\ x < 0 \rightarrow x^2-1 \leq 0 \rightarrow x \in (-1, 0] \end{cases}$

$\rightarrow |x|-1 > 0 \rightarrow x \in (0, +\infty) \textcircled{2}$

$\textcircled{1} \textcircled{2} \rightarrow x \in [1, +\infty)$

$$y = \sqrt{|x-1| [x-3]}$$

$$\rightarrow |x-1| \times [x-3] \geq 0 \rightarrow [x-3] \geq 0$$

$$| \quad \quad \quad | \quad \quad \quad | \quad \quad \quad | \quad \quad \quad | \rightarrow x \in [3, +\infty)$$

(بـ)

$$y = \sqrt{(x-2) [x-2]}$$

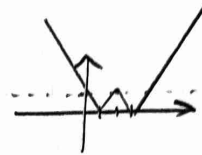
$$\rightarrow (x-2) [x-2] \geq 0$$

$$\rightarrow x-2=0 \rightarrow x=2 \quad \{ [x-2]=0 \rightarrow x \in [2, 3) \}$$

$$| \quad \quad \quad | \quad \quad \quad | \quad \quad \quad | \quad \quad \quad | \rightarrow x \in \mathbb{R}$$

$$||x-1|-1|-k=0 \rightarrow ||x-1|-1|=k$$

نقطه از من کنیم



اگر من خط هم معادله ۳ جواب داشته باشد $k=1$

$$f(x) = \frac{\frac{x^2+3x+2}{x^2+3x+2}}{\frac{x+1}{x-1}}$$

$$\left. \begin{array}{l} x^2+3x+2 \neq 0 \rightarrow x \neq -1, -2 \\ x-1 \neq 0 \rightarrow x \neq 1 \\ x+1 \neq 0 \rightarrow x \neq -1 \end{array} \right\} \rightarrow x=3$$

$$x^2-4x+9=0 \rightarrow (x-3)^2=0 \rightarrow \text{معادله یک ریشه دارد} \rightarrow x=3$$

$$y = \log_{n+1} \log_{\frac{1}{n}}$$

$$\rightarrow \log_{\frac{1}{n}} > 0 \rightarrow \log_n < 0 \rightarrow 0 < x < 1 \quad (1)$$

$$n+1 > 0 \rightarrow n > -1 \quad (2), \quad n+1 \neq 0 \rightarrow n \neq -1 \quad (3) \rightarrow (1), (2), (3) \rightarrow x \in (0, 1)$$

$$D_{f(x)} = [-5, 3] \rightarrow -5 \leq 3x^2-1 \leq 3 \rightarrow -4 \leq 3x^2 \leq 4$$

$$\rightarrow -\frac{4}{3} \leq x^2 \leq \frac{4}{3} \rightarrow x^2 \leq \frac{4}{3} \rightarrow -\frac{2}{\sqrt{3}} \leq x \leq \frac{2}{\sqrt{3}}$$

بدین