

$$y = \frac{\sin x - r}{r \cos x + 1} > 0$$

$$r \cos x + 1 \neq 0$$

$$r \cos x \neq -1 \quad \cos x \neq -\frac{1}{r}$$



$$Df = \mathbb{R} - \left\{ rka + \frac{ra}{r}, rka + \frac{ra}{r} \right\}$$

$$y = \frac{\sin x + r}{\cos x - 1}$$

$$\cos x - 1 \neq 0 \quad \cos x \neq 1$$



$$Df = \mathbb{R} - \{ rka \}$$

$$y = \frac{r \sin x + 1}{\tan x + 1}$$

$$\tan x + 1 \neq 0 \quad \tan x \neq -1$$

$$\cos x \neq 0$$



$$Df = \mathbb{R} - \left\{ ka - \frac{\pi}{r}, ka + \frac{\pi}{r} \right\}$$

$$y = \frac{\cos x + 1}{\cot x - 1}$$

$$\cot x - 1 \neq 0 \quad \cot x \neq 1$$

$$\sin x \neq 0$$



$$Df = \mathbb{R} - \left\{ ka + \frac{\pi}{r}, ka \right\}$$

$$y = \sin y = x - r$$

$$-1 \leq x - r \leq 1 \Rightarrow -1 \leq x \leq r \Rightarrow -1 \leq x \leq \sqrt{r} \Rightarrow Df = [1, \sqrt{r}]$$

$$y = \arccos(\sqrt{x} - r)$$

$$-1 \leq \sqrt{x} - r \leq 1$$

$$r \leq \sqrt{x} \leq r+1 \Rightarrow r^2 \leq x \leq (r+1)^2 \Rightarrow Df = [r^2, (r+1)^2]$$

$$y = \cos y = |x| - r$$

$$-1 \leq |x| - r \leq 1$$

$$r \leq |x| \leq r+1$$

$$r \leq |x| \Rightarrow x \leq -r \text{ or } x \geq r$$

$$|x| \leq r+1 \Rightarrow -r-1 \leq x \leq r+1$$

$$Df = [-r-1, -r] \cup [r, r+1]$$

$$y = \arcsin(x^2 + rx + 1) \Rightarrow -1 \leq x^2 + rx + 1 \leq 1$$

$$Df = [-2, -3] \cup [0, -1]$$

$$x^2 + rx + 1 \leq 1$$

$$x^2 + rx \leq 0$$

$$x(x+r) \leq 0$$

$$x \leq 0 \text{ or } x \geq -r$$

$$-1 \leq x^2 + rx + 1$$

$$0 \leq x^2 + rx + r$$

$$0 \leq (x+1)(x+r)$$

$$y = \log_r \frac{x^2 - r}{r}$$

$$x^2 - r > 0$$

$$x^2 > r$$

$$x > \sqrt{r} \text{ or } x < -\sqrt{r}$$

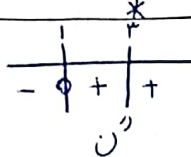
$$Df = (-\infty, -\sqrt{r}) \cup (\sqrt{r}, +\infty)$$

$$y = \log_r \frac{r - |x|}{r}$$

$$r - |x| > 0$$

$$-r < x < r$$

$$Df = (r, -r)$$

$y = \log \frac{x-1}{x-2}$ $x-1 > 0 \Rightarrow x > 1$ $x-2 > 0 \Rightarrow x > 2$ $x-2 \neq 0$ $x \neq 2$	$Df: (2, \infty) - \{2\}$	6
$y = \log \frac{x^2-1}{x+2}$ $x^2-1 > 0 \Rightarrow x^2 > 1 \Rightarrow \begin{cases} x > 1 \\ x < -1 \end{cases}$ $x+2 > 0 \Rightarrow x > -2$ $x+2 \neq 0 \Rightarrow x \neq -2$	$Df: (-2, 1) - \{-2\}$	6
$y = \log \frac{x^2-4x+3}{x-2} = \frac{(x-1)(x-3)}{x-2}$ $x \neq 2$	 $Df: [1, 2) \cup (3, +\infty)$	7
$y = \log \frac{x+2}{x-2}$ $x+2 > 0 \Rightarrow x > -2$ $x-2 \neq 0 \Rightarrow x \neq 2$	$Df: (-2, +\infty) - \{2\}$	7
$y = \sqrt{x - \log_r \frac{x-1}{r}}$ $x-1 > 0 \Rightarrow x > 1$ $x - \log_r \frac{x-1}{r} \geq 0 \Rightarrow x \geq \log_r \frac{x-1}{r}$ $x-1 \geq 1 \Rightarrow x \geq 2$ $x \geq 1$	$Df: (2, 1.5]$	8
$y = \log (x \log_r x - 1)$ $x > 0$ $x \log_r x - 1 \geq 0 \Rightarrow x \log_r x \geq 1 \Rightarrow \log_r x \geq \frac{1}{x} \Rightarrow x \geq \frac{1}{x} \Rightarrow x \geq 1$	$Df: [\sqrt{e}, +\infty)$	8
$y = \frac{x}{x^2+1}$ $x \neq -1$	$Df: \mathbb{R}$	9
$y = \frac{x}{x^2-1}$ $x^2-1 \neq 0 \Rightarrow x \neq \pm 1$	$Df: \mathbb{R} - \{1, -1\}$	
$y = \frac{x}{x^2-2}$ $x^2-2 \neq 0 \Rightarrow x \neq \pm \sqrt{2}$	$Df: \mathbb{R} - \{\pm \sqrt{2}\}$	
$y = \frac{x}{x^2-3}$ $x^2-3 \neq 0 \Rightarrow x \neq \pm \sqrt{3}$	$Df: \mathbb{R}$	
$y = (x+1)!$ $x+1 \in \mathbb{N}$ $x \in \mathbb{N}-1$	$Df: \{n \mid n \leq \frac{k-1}{r}, k \in \mathbb{N}\}$	10
$y = \left(\frac{x-1}{x-2} \right)!$ $\frac{x-1}{x-2} \in \mathbb{N}$ $x-1 \in \mathbb{N}w - \delta w$ $x-2 \in \mathbb{N}w - \delta w$ $x \in \frac{r-\delta w}{r-\gamma w}$	$Df: \{n \mid n \leq \frac{r-\delta k}{r-\gamma k}, k \in \mathbb{N}\}$	