

$$y = \frac{\sin x - 1}{1 \cos x + 1} \Rightarrow 1 \cos x + 1 \neq 0 \rightarrow \cos x \neq -1 \quad (1)$$

$$y = \frac{\sin x + 1}{\cos x - 1} \Rightarrow \cos x - 1 \neq 0 \rightarrow \cos x \neq 1 \quad D_f = \mathbb{R} - \left\{ 2k\pi + \frac{\pi}{3}, 2k\pi + \frac{5\pi}{3} \right\}$$

$$y = \frac{1 \sin x + 1}{\tan x + 1} \rightarrow \tan x \neq -1 \rightarrow \text{Unit Circle Diagram} \quad D_f = \mathbb{R} - \left\{ k\pi - \frac{\pi}{4}, k\pi + \frac{3\pi}{4} \right\} \quad (2)$$

$$y = \frac{\cos x + 1}{\cot x - 1} \rightarrow \cot x \neq 1 \rightarrow \text{Unit Circle Diagram} \quad D_f = \mathbb{R} - \left\{ k\pi, k\pi + \frac{\pi}{2} \right\}$$

$$\sin y = x^2 - 1 \rightarrow -1 \leq x^2 - 1 \leq 1 \rightarrow 0 \leq x^2 \leq 2 \rightarrow -\sqrt{2} \leq x \leq \sqrt{2} \quad (3)$$

$$y = \arccos(\sqrt{x} - 1) \rightarrow x \geq 0, -1 \leq \sqrt{x} - 1 \leq 1 \rightarrow 0 \leq \sqrt{x} \leq 2 \rightarrow 0 \leq x \leq 4$$

$$\cos y = |x| - 1 \rightarrow -1 \leq |x| - 1 \leq 1 \rightarrow 0 \leq |x| \leq 2 \rightarrow -2 \leq x \leq 2$$

$$y = \arcsin(x^2 + 3x + 1) \rightarrow x^2 + 3x + 1 \leq 1 \rightarrow x^2 + 3x \leq 0 \rightarrow x(x+3) \leq 0 \rightarrow x \in [-3, 0]$$

$$y = \log_p(x^2 - 4) \rightarrow x^2 - 4 > 0 \rightarrow x^2 > 4 \rightarrow x > 2 \text{ or } x < -2$$

$$y = \log_p(1 - |x|) \rightarrow 1 - |x| > 0 \rightarrow |x| < 1 \rightarrow -1 < x < 1$$

$$y = \log_p(x^2 - 1) \rightarrow x^2 - 1 > 0 \rightarrow x^2 > 1 \rightarrow x > 1 \text{ or } x < -1$$

$$D_f = (-1, 1)$$

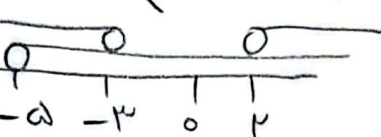
$$y = \log \frac{\omega - x}{x - 1} \quad \left. \begin{array}{l} \omega - x > 0 \rightarrow \omega > x \\ x - 1 > 0 \rightarrow x > 1 \\ x - 1 \neq 0 \quad x \neq 1 \end{array} \right\} \rightarrow \{(x, \omega) - \{1\}\} \cup D_f$$

$$y = \log \frac{x^2 - 1}{x + 1} \quad \left. \begin{array}{l} x^2 - 1 > 0 \quad x^2 > 1 \\ x + 1 > 0 \quad x > -1 \\ x^2 - 1 \neq 0 \quad x \neq \pm 1 \end{array} \right\} \rightarrow x > 1, x < -1 \quad (1, +\infty) \cup (-\infty, -1)$$

$$y = \log \frac{x^2 - 1}{x + 1} \rightarrow \frac{x^2 - 1}{x + 1} > 0 \quad (x - 1)(x - (-1)) > 0$$


$$D_f = (-1, -1) \cup (1, +\infty) - \{1\}$$

$$y = \log \frac{x+1}{x-1} \quad \frac{x+1}{x-1} > 0 \rightarrow \frac{-1}{-1} \quad \frac{1}{1} \rightarrow (-\infty, -1) \cup (1, +\infty)$$

$$D_f = (-\infty, -1) \cup (1, +\infty) - \{-1\}$$


$$y = \sqrt{1 - \log_p^{x-1}} \rightarrow x > 1 \quad 1 - \log_p^{x-1} \geq 0 \quad 1 \geq \log_p^{x-1} \rightarrow 1 \geq x - 1$$

$$D_f = (1, 1] \quad y = \log(1 \log_p^x - 1) \rightarrow x > 0 \quad 1 \log_p^x - 1 > 0 \rightarrow \log_p^x > 1 \rightarrow x > \sqrt{1} *$$

$$D_f = (\sqrt{1}, +\infty)$$

$$y = \frac{1}{1+x} \rightarrow \frac{1}{1+x} \neq 0$$

$$y = \frac{1}{1-x} \rightarrow \frac{1}{1-x} \neq 0$$

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$$y = \frac{1}{1-x} \rightarrow D_f = \mathbb{R} - \{0\}$$

$$x \neq \frac{1}{1} \rightarrow \mathbb{R} - \{1\}$$

$$y = (x+1)! \quad 1 \in \mathbb{N} \rightarrow x+1 \in \mathbb{N} - 1 \rightarrow x \in \mathbb{N} - 1$$

$$y = \left(\frac{1}{x-1}\right)! \quad \frac{1}{x-1} \in \mathbb{N} \rightarrow \frac{1}{x-1} \in \mathbb{N} \rightarrow x-1 = \frac{1}{\mathbb{N}}$$