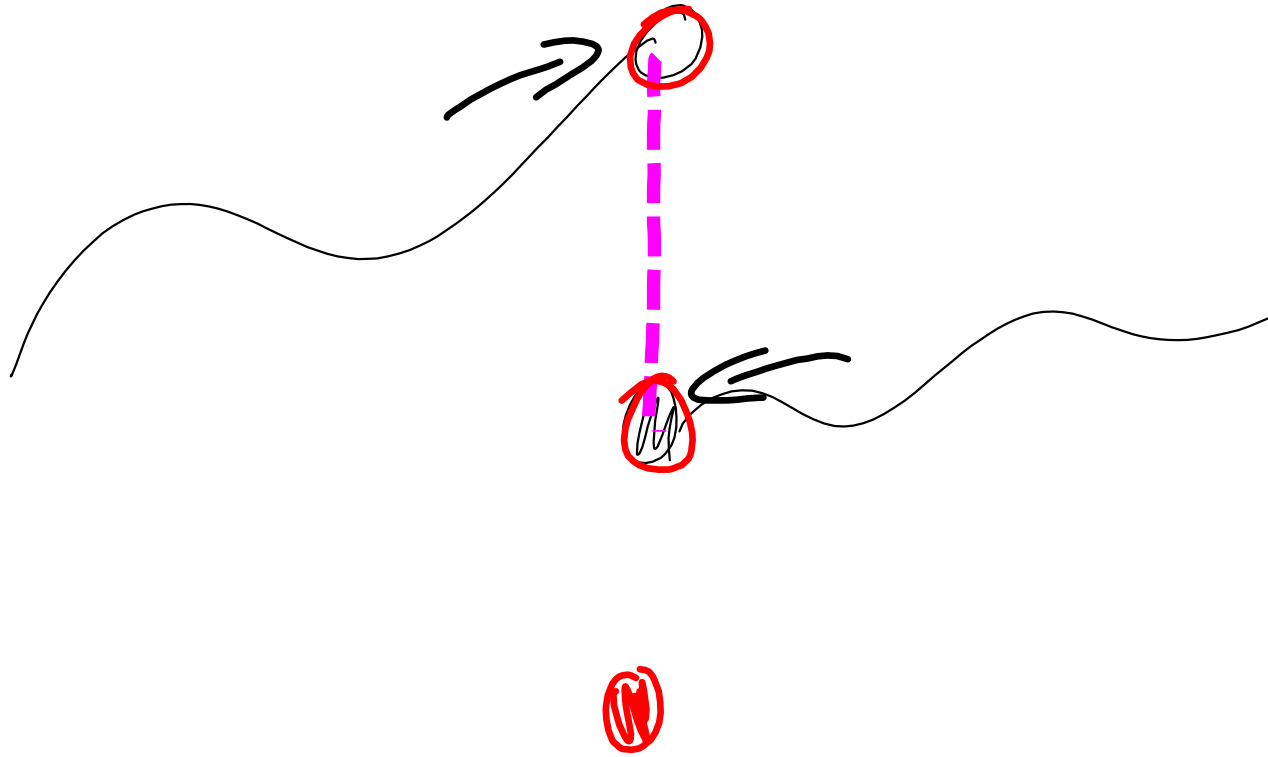


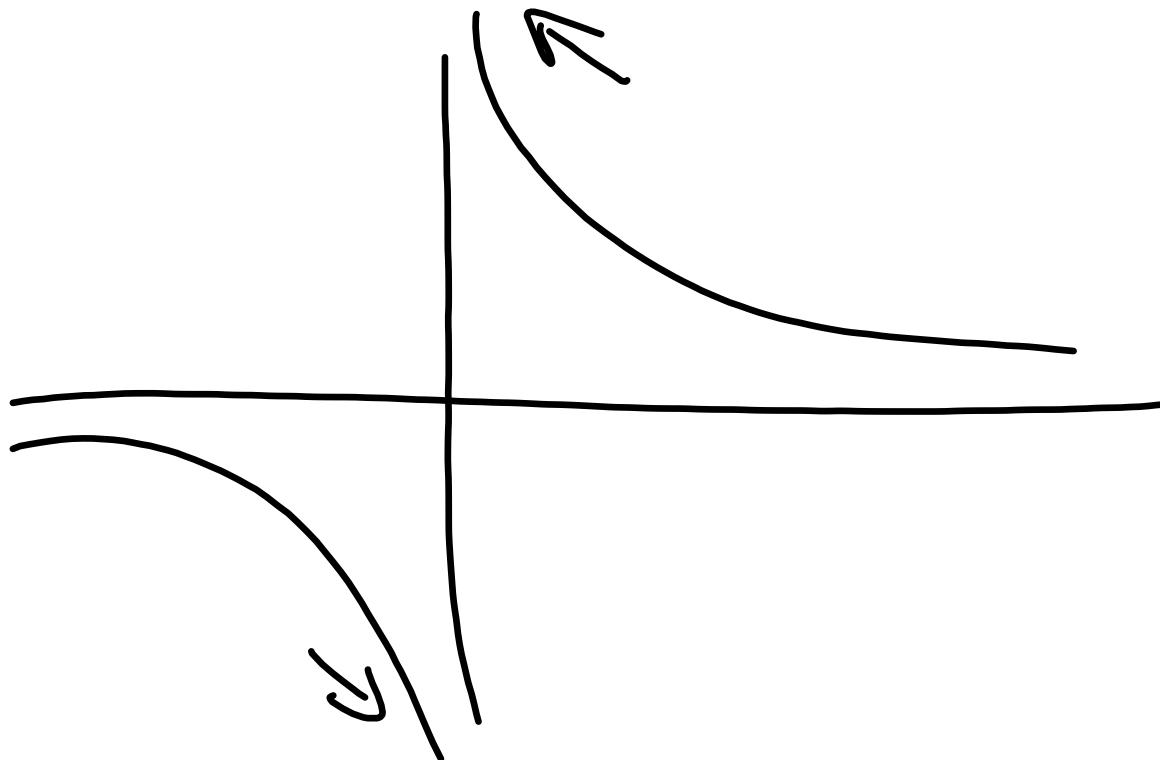
$$\frac{\sin x}{x} \xrightarrow{x \rightarrow 0} 1 \quad | \quad x \neq 0 \quad | \quad \text{Dom} = \mathbb{R} \setminus \{0\}$$

$$f(x) = \begin{cases} \frac{\sin x}{x} & , x \neq 0 \\ 1 & , x = 0 \end{cases}$$

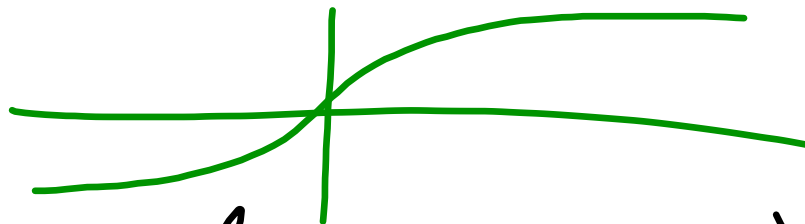




$\frac{1}{x}$

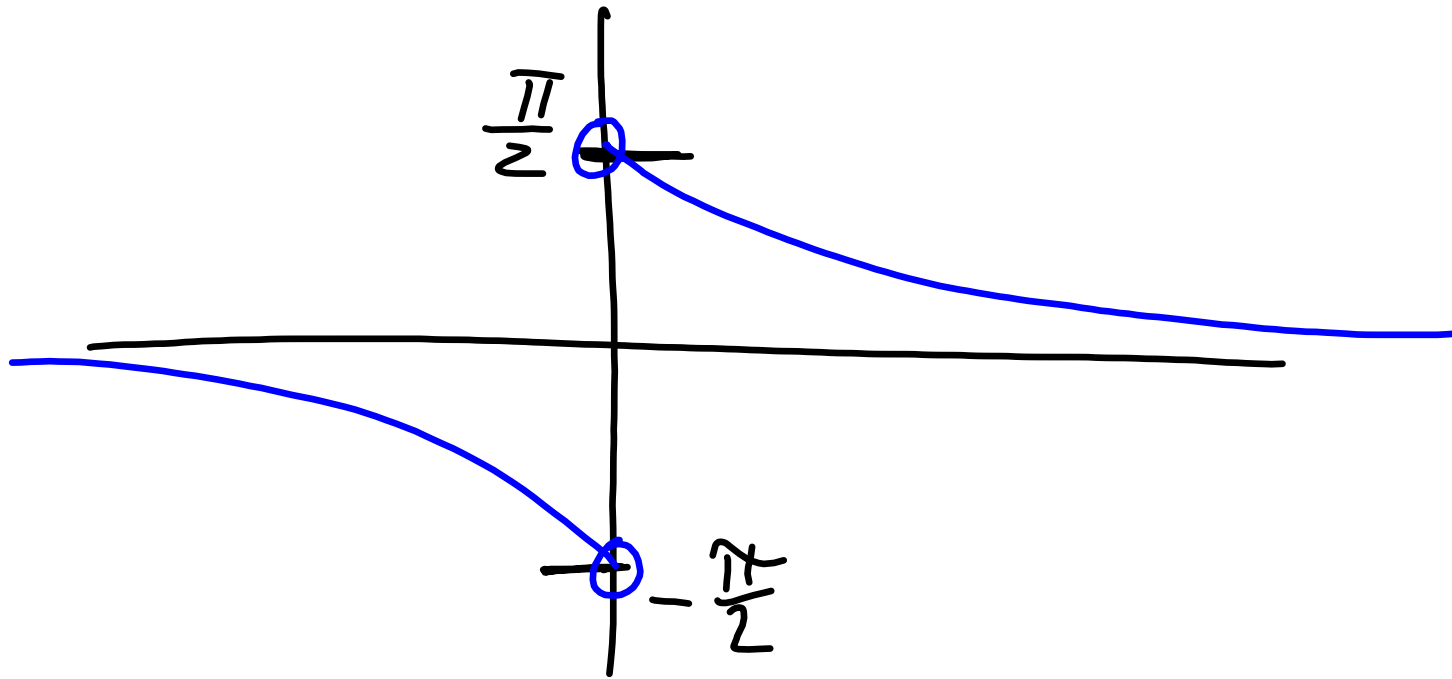


$$\text{arctg} \frac{1}{x}$$



$$x \rightarrow 0^+ \Rightarrow \text{arctg} \frac{1}{0^+} = \text{arctg}(+\infty) = \frac{\pi}{2}$$

$$x \rightarrow 0^- \quad \frac{1}{0^-} \quad (-\infty) = -\frac{\pi}{2}$$



$$\sin \frac{1}{x}$$

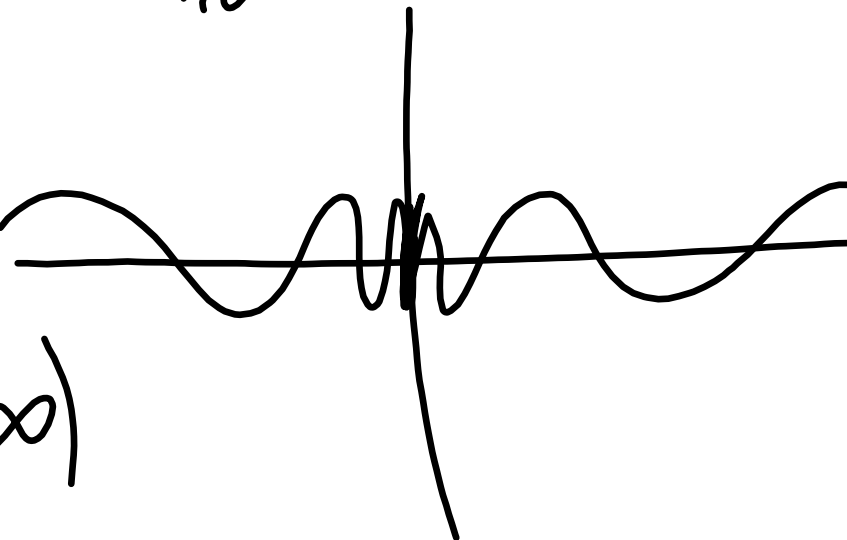
$$x = \frac{1}{10^{10}}$$

$$x \rightarrow 0^+$$

$$x \rightarrow 0^-$$

$$\sin \infty$$

$$\sin(-\infty)$$



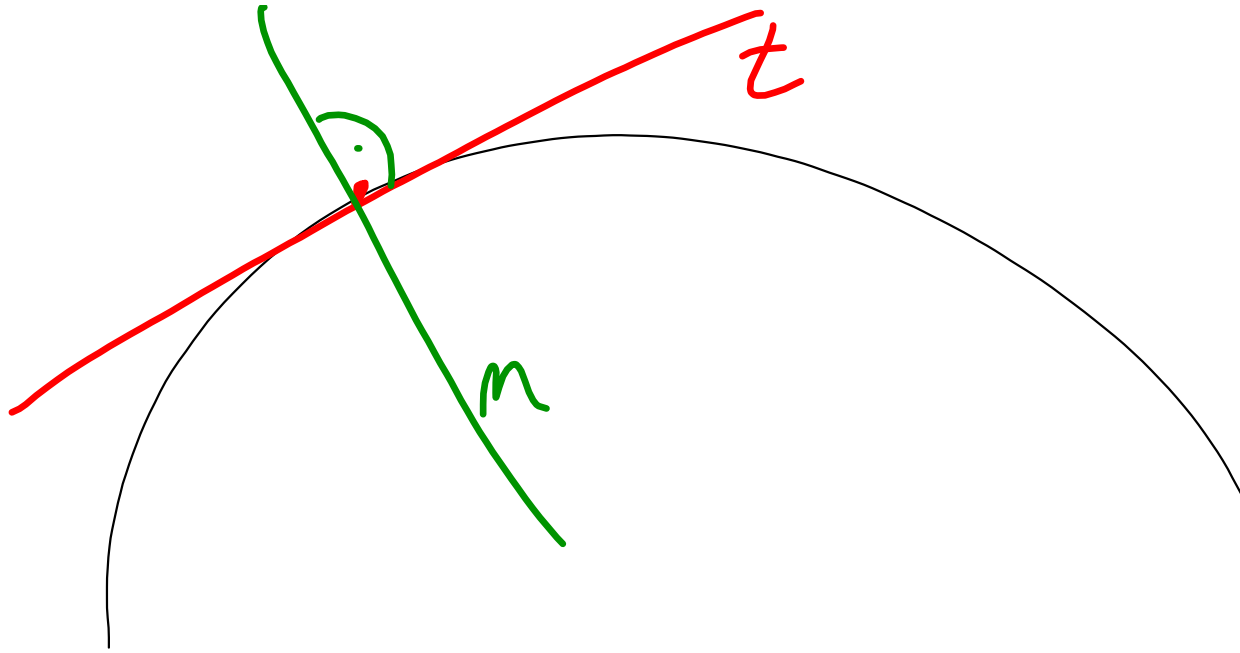
$$e^{\frac{1}{x}} \quad x \rightarrow 0^- \Rightarrow e^{\frac{1}{0^-}} = e^{-\infty} =$$

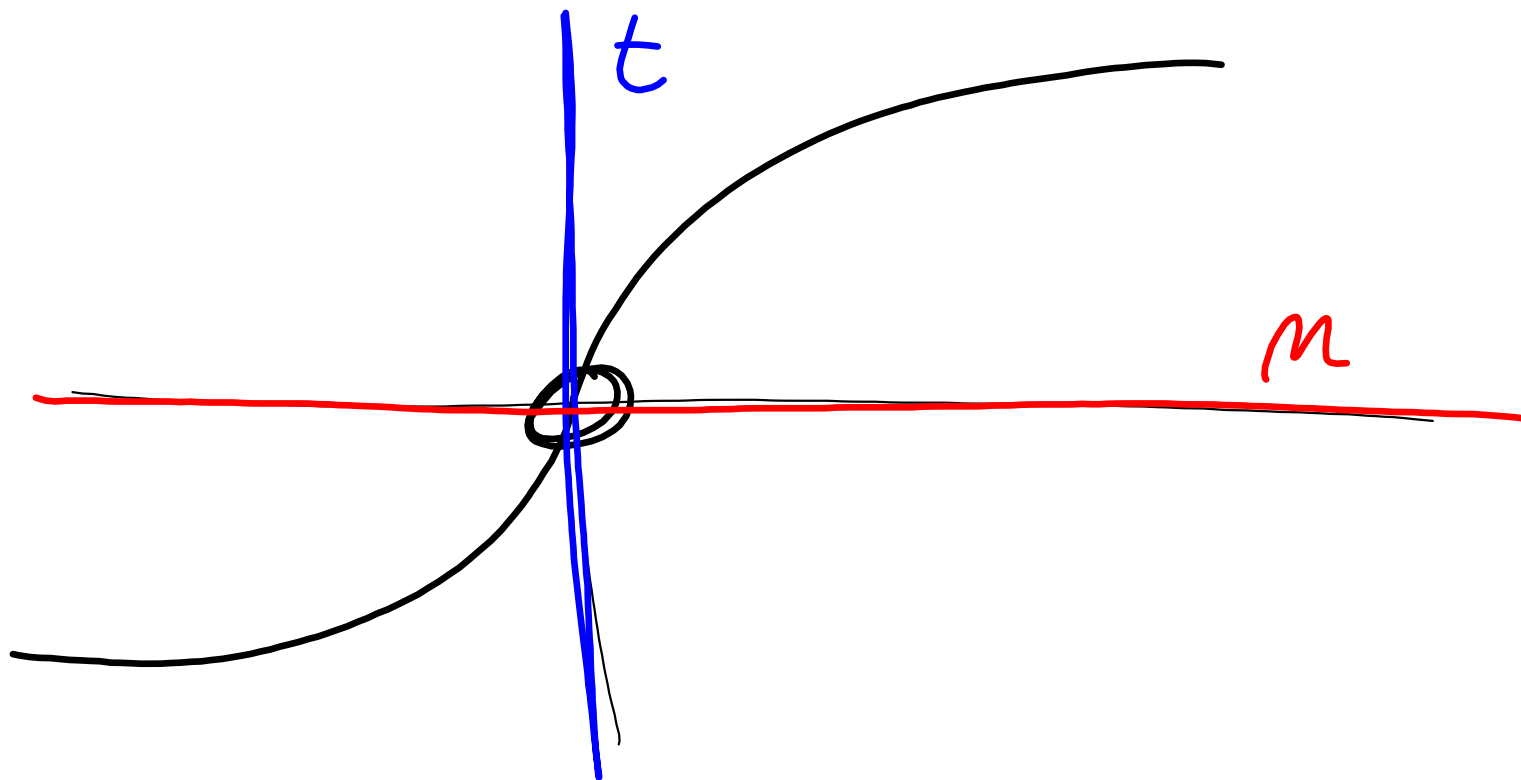
$$x \rightarrow 0^+ \Rightarrow e^{\frac{1}{0^+}} = e^{\infty} = \infty$$
$$= \frac{1}{\infty} = \frac{1}{\infty} = 0$$

$$e^{\frac{1}{x}}, x \rightarrow -\infty, e^{\frac{1}{-\infty}} = e^0 = 1$$

$$(f \cdot g)'(x_0) = \lim_{x \rightarrow x_0} \frac{f(x)g(x) - f(x_0)g(x_0)}{x - x_0}$$

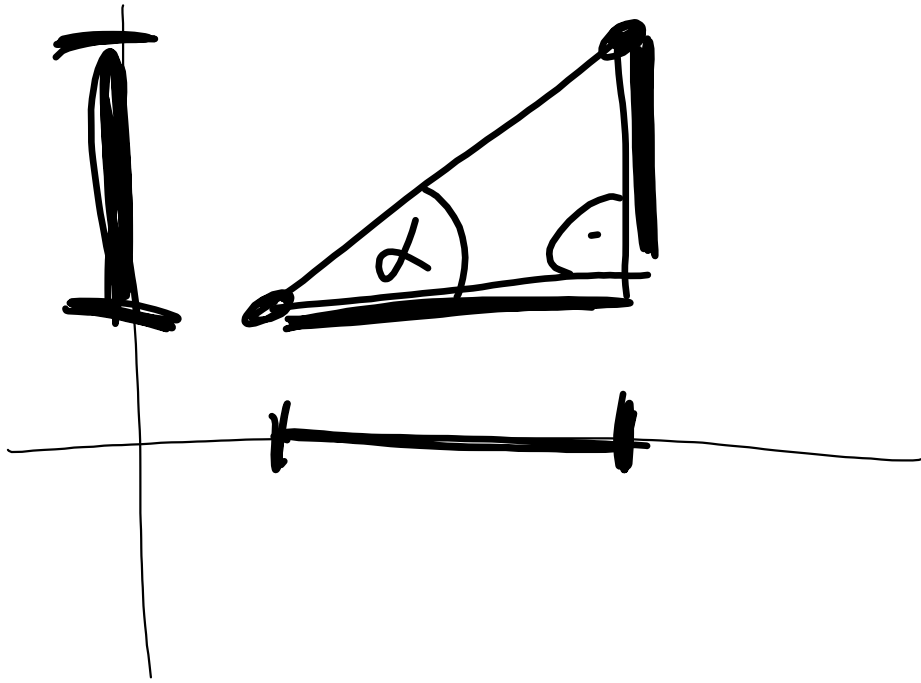
$$f'(x_0) = \lim_{x \rightarrow x_0} \frac{f(x) - f(x_0)}{x - x_0} \quad \Bigg\| \quad g'(x_0) = \lim_{x \rightarrow x_0} \frac{g(x) - g(x_0)}{x - x_0}$$





$$f'(1) = 17$$

⋮

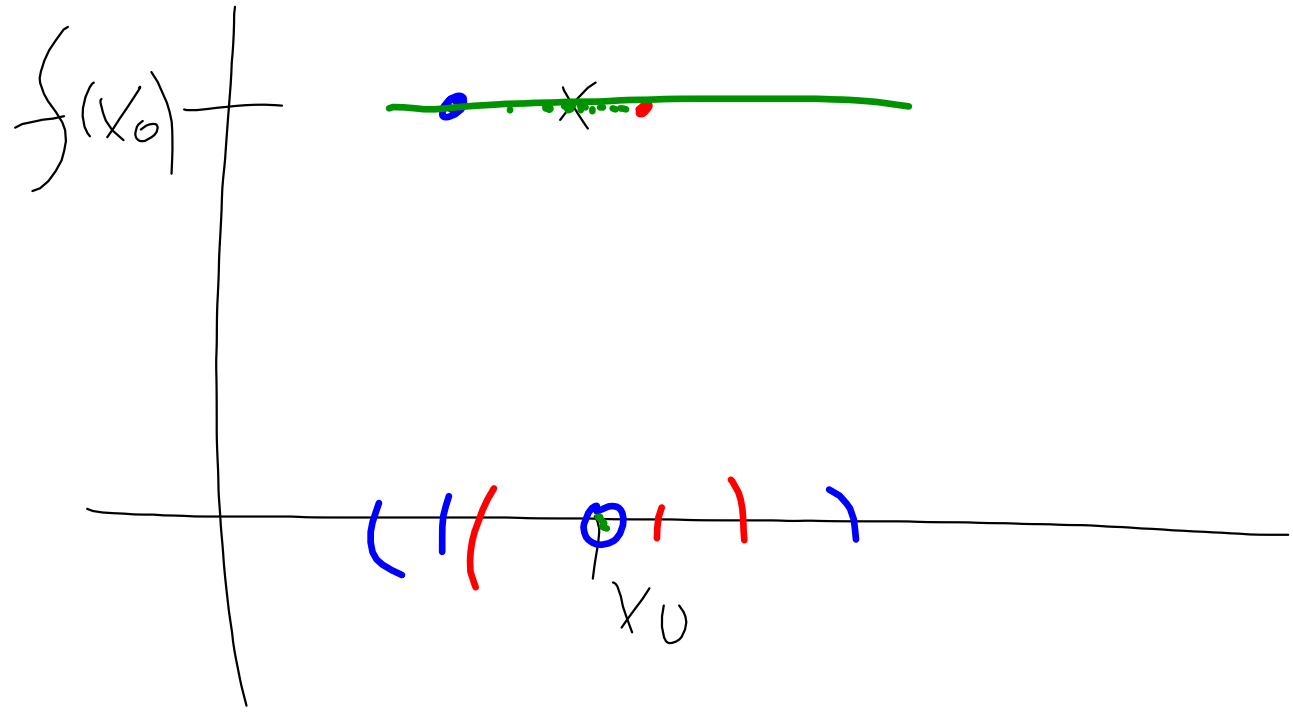


$$\tan \alpha = \frac{2}{1}$$

$$(f \cdot g \cdot h)' = f'gh + fg'h + fgh'$$

A handwritten mathematical expression enclosed in a hand-drawn oval. The expression consists of the letter 'f' at the top, followed by a horizontal line, then the letter 'g' below the line. Below 'g' is another horizontal line, followed by the letter 'h'. Below 'h' is a third horizontal line, and finally the letter 'h' at the bottom. The entire structure is contained within the oval.

$$\lim_{x \rightarrow x_0} f(x) \stackrel{?}{=} f(x_0)$$



$$(\sin x)' = \cos x$$

$$(\arcsin x)' = \frac{1}{\cos(\arcsin x)}$$

$$\frac{5}{x} = 5 \cdot x^{-1}$$

$$\left(\frac{3}{5}\right)' = \frac{3' \cdot 5 - 3 \cdot 5'}{25} = \frac{0.5 - 3.0}{25} = \frac{0}{25} = 0$$

$\log x$

$\ln x$

$\lg x$

$$\sin^2 \frac{b}{2} = \frac{1 - \cosh}{2}$$

$$\lim_{h \rightarrow 0} \frac{\sin \frac{h}{2}}{h \cdot \frac{1}{2}} \cdot \frac{1}{2}$$

↓

$$\sin^2 x + \cos^2 x = 1$$

$$\cos x = \sqrt{1 - \sin^2 x}$$

$$\cos^2 x = \frac{1}{1 + \tan^2 x} \quad \left| \quad \frac{1}{\cos^2 x} = \frac{1}{\frac{1}{1 + \tan^2 x}} \right. = 1 + \tan^2 x$$