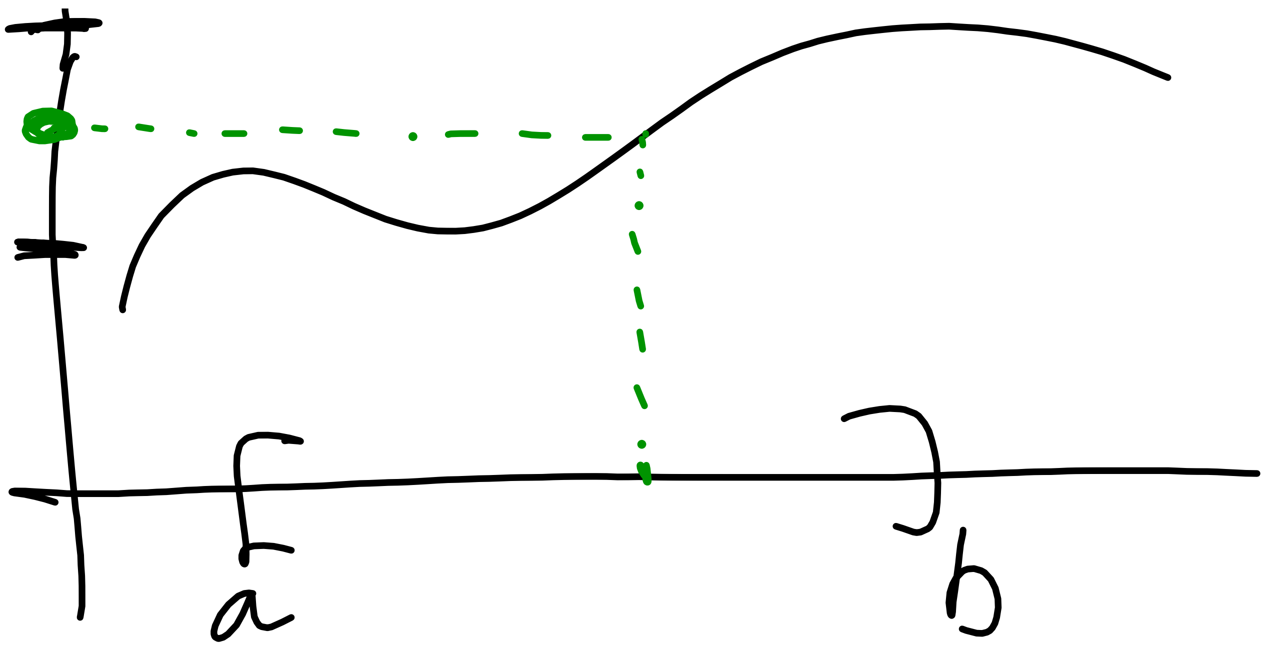
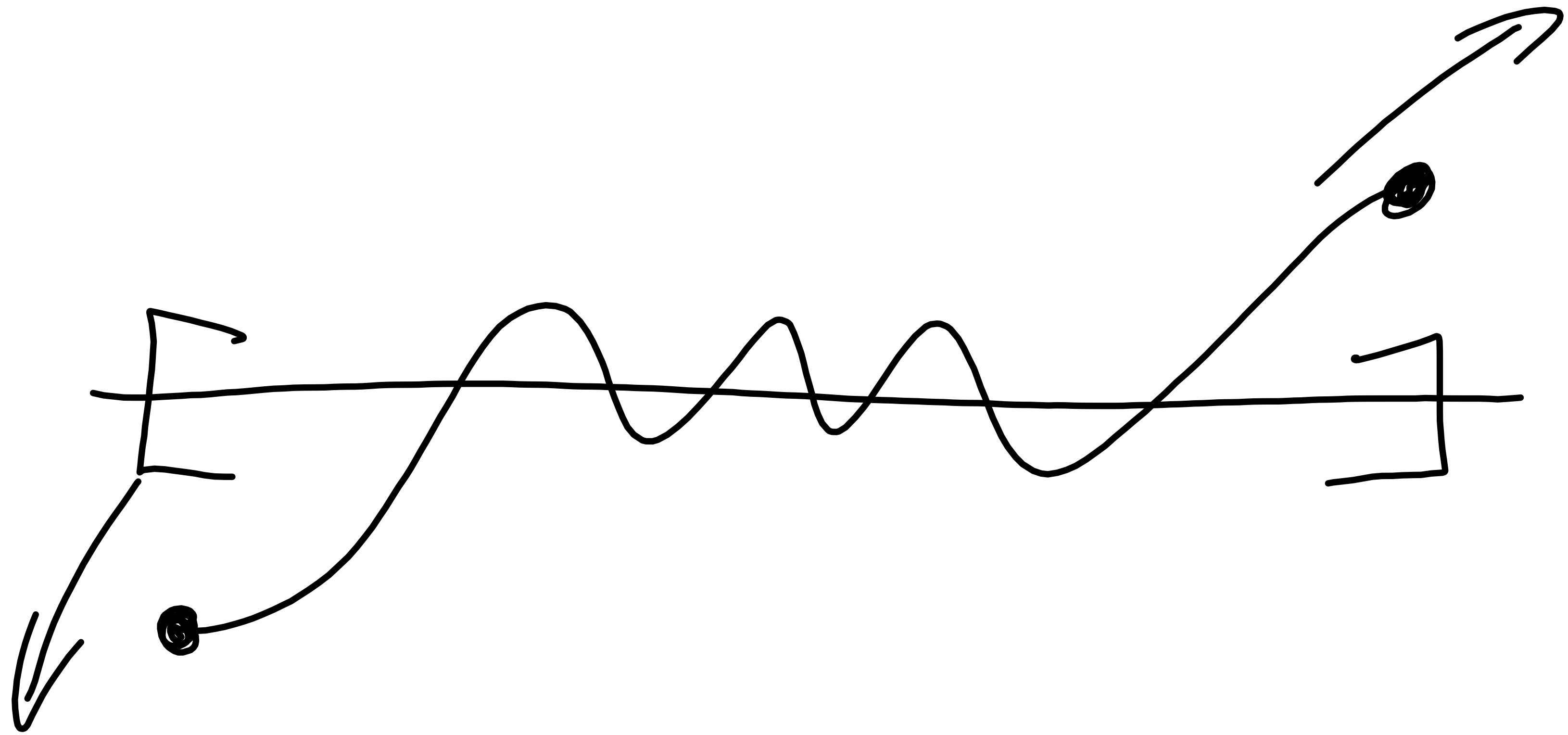

a
b

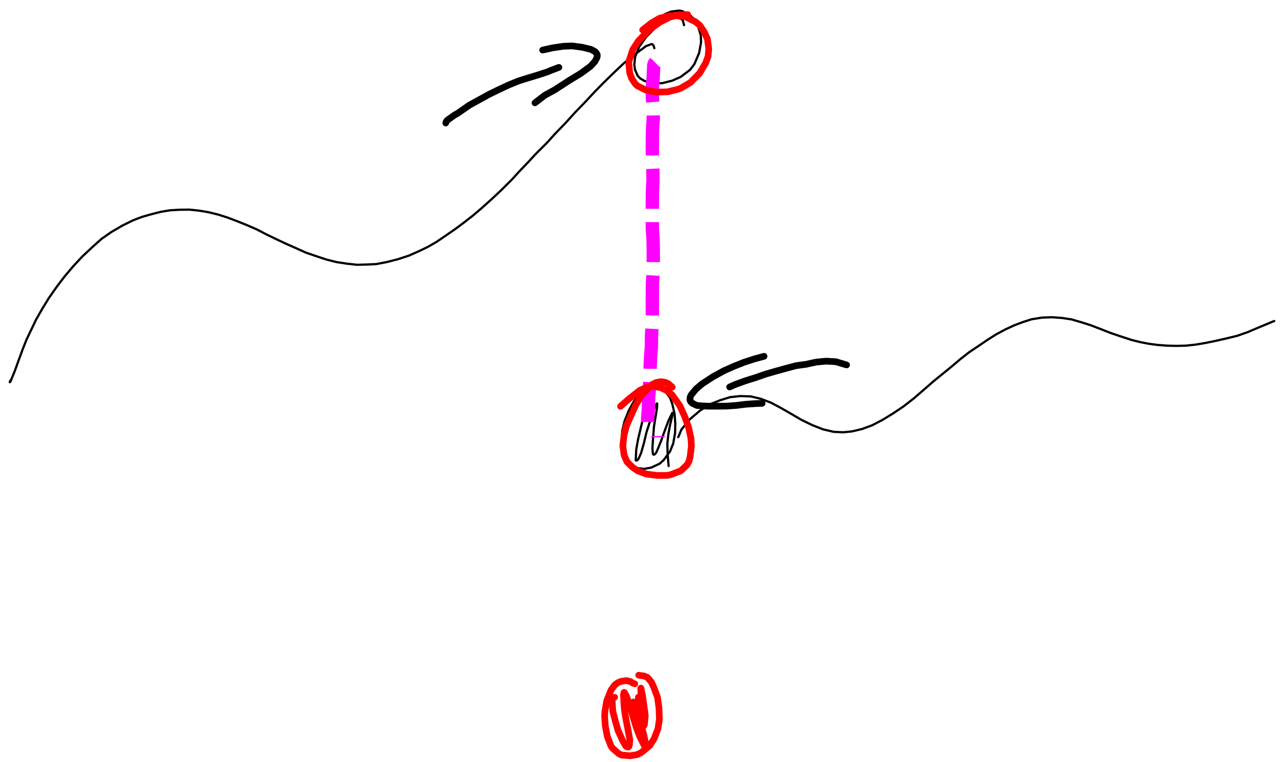


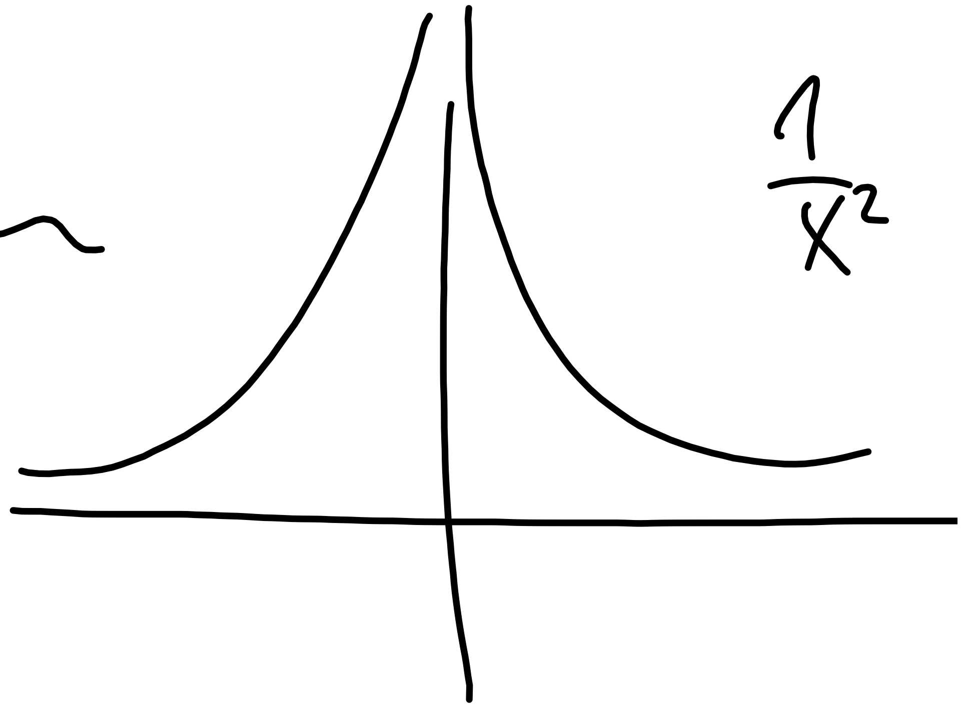
$$\frac{\sin x}{x} \xrightarrow{x \to 0} 1$$

$x = 0$

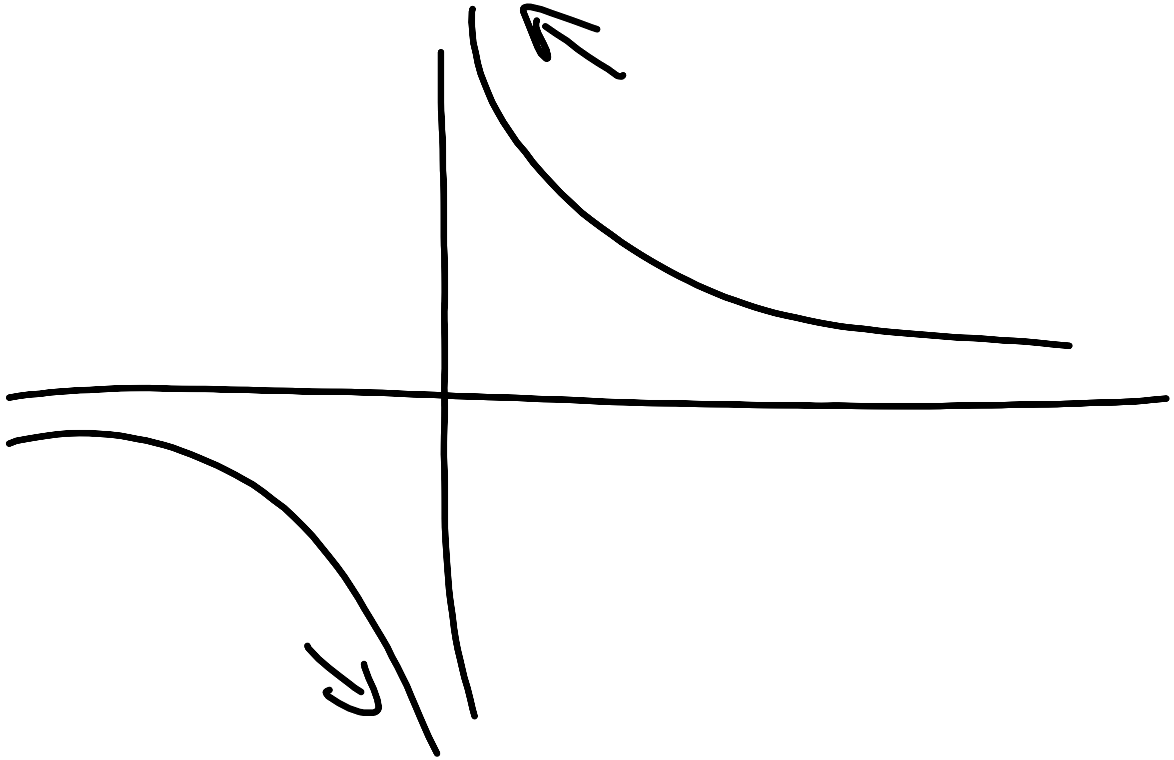
$Dom = \mathbb{R} - \{0\}$

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

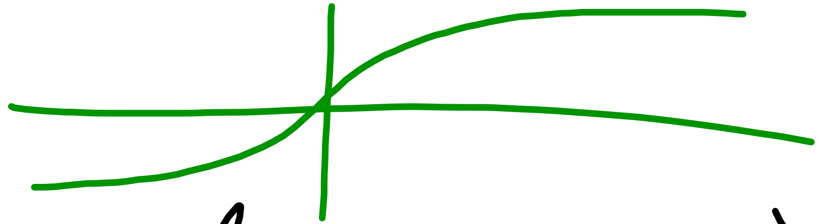



$\frac{1}{x^2}$

$\frac{1}{x}$

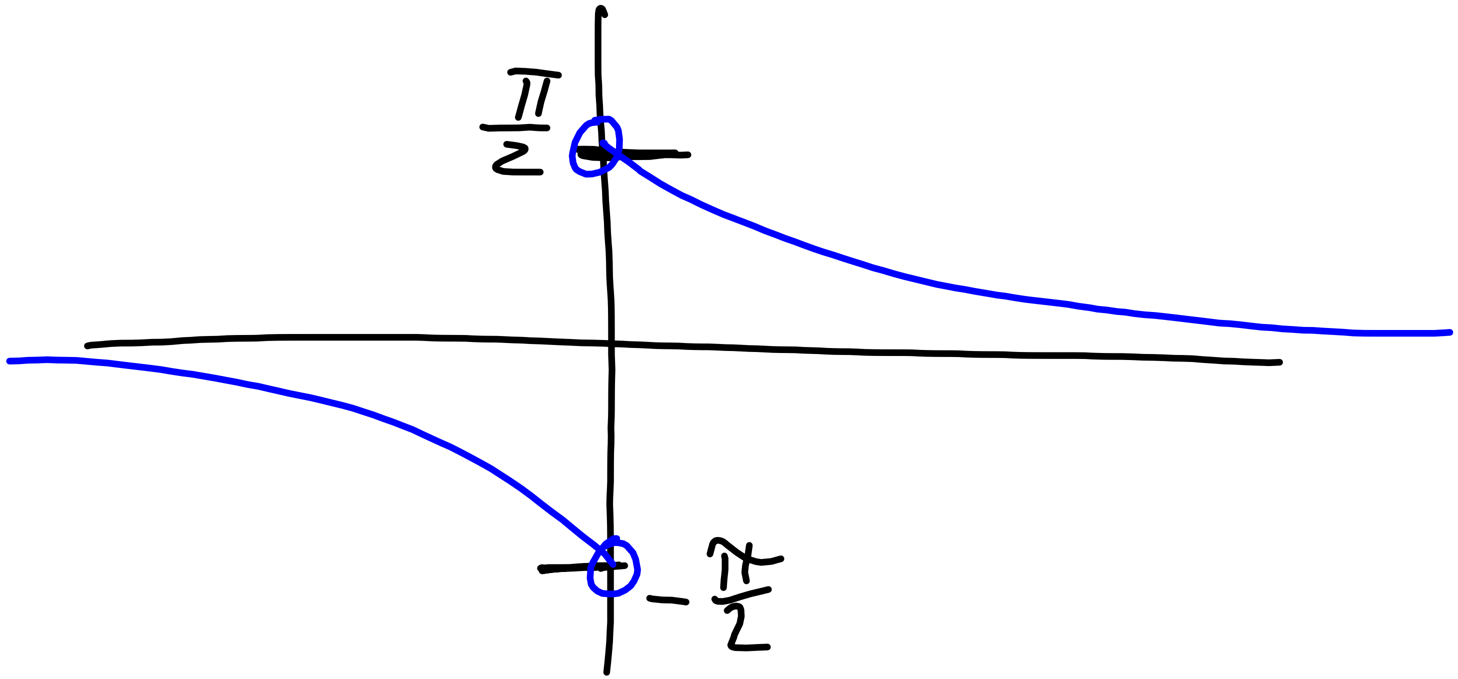


$$\operatorname{arctg} \frac{1}{x}$$



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

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



$\frac{\pi}{2}$
$-\frac{\pi}{2}$

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

$x \to 0^+$ $\sin\infty$

$x \to 0^-$ $\sin(-\infty)$

$$e^{\frac{1}{x}}$$

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

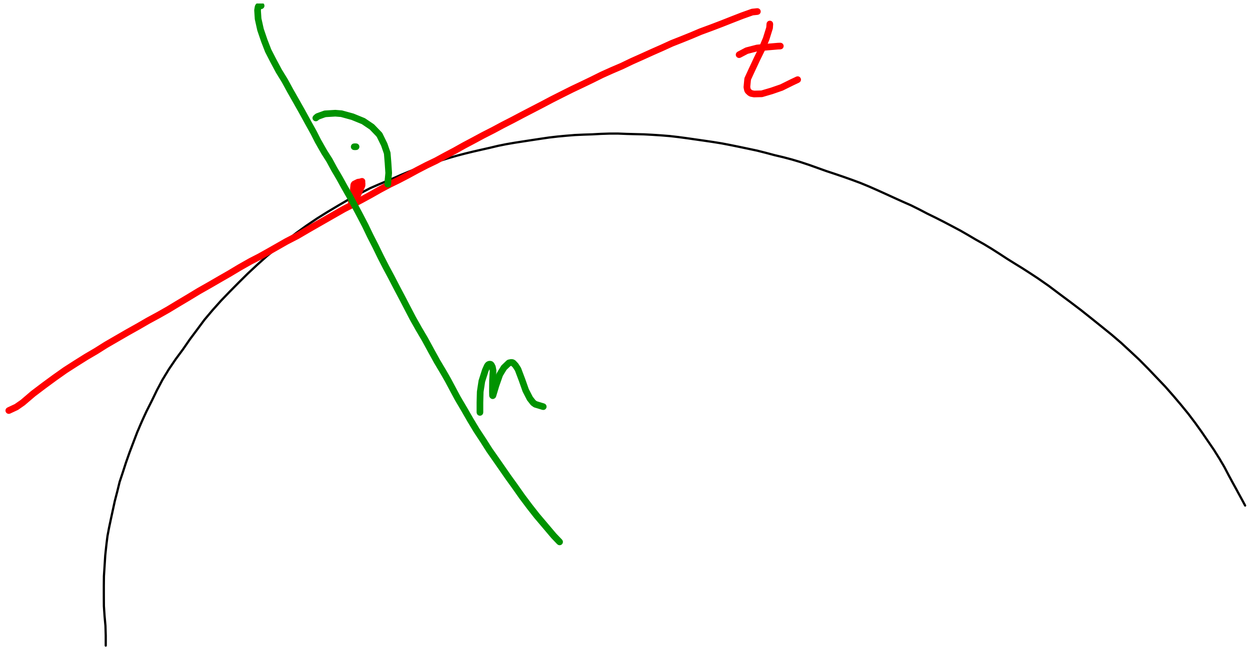
$$x \to 0^+ \Rightarrow e^{\frac{1}{0^+}} = e^{\infty} = \infty$$

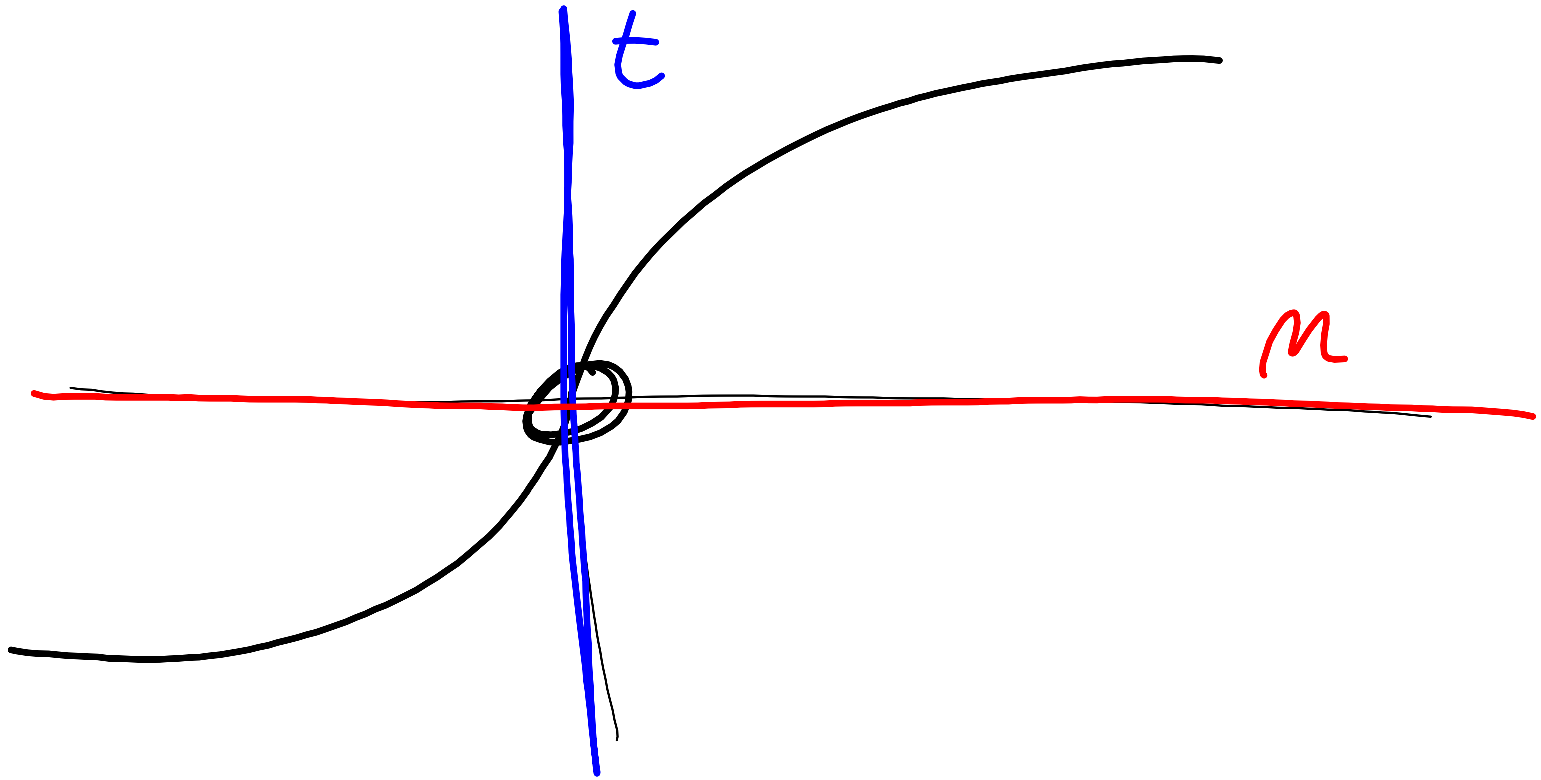
$$e^{\frac{1}{x}}, \quad x \to -\infty, \quad e^{\frac{1}{-\infty}} = e^0 = 1$$

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

$$f'(x_0) = \lim \frac{f(x) - f(x_0)}{x - x_0}$$

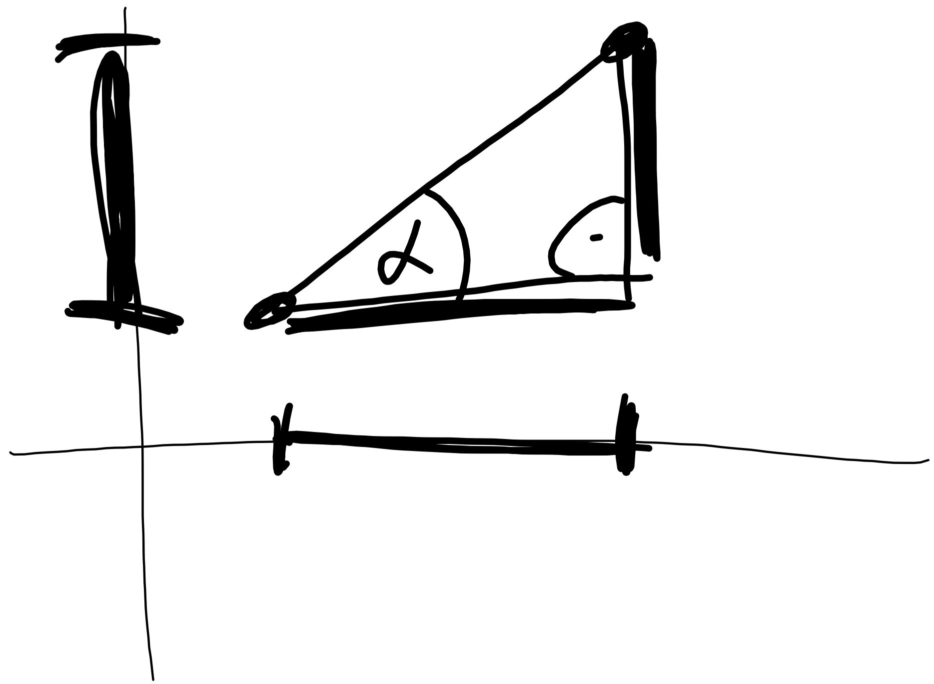
$$g'(x_0) = \lim \frac{g(x) - g(x_0)}{x - x_0}$$


t
n


t
n

$f'(1) = 17$

$\vdots$

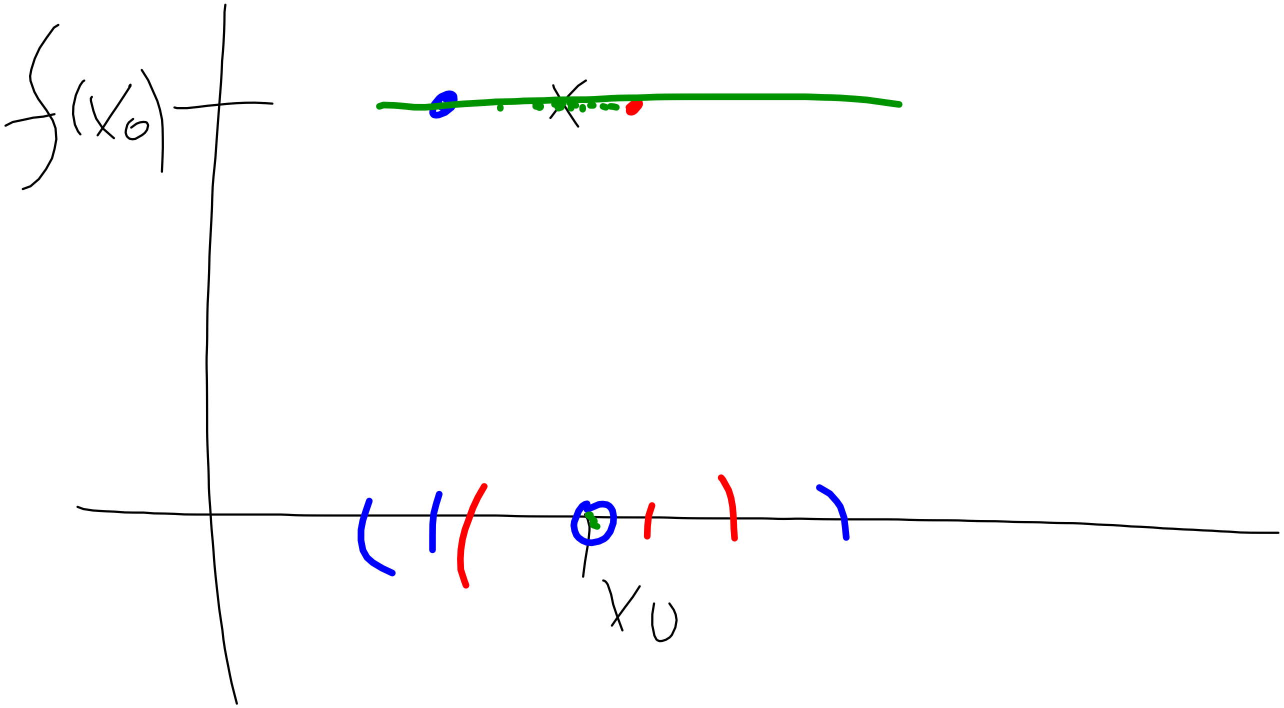


$\operatorname{tg} \alpha = ?$

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

$$\frac{\frac{f}{g}}{\frac{h}{k}}$$

$$\lim_{x \to x_0} f(x) \overset{?}{=} f(x_0)$$


f(x0)
x0

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

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

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

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

$$= \frac{0 \cdot 5 - 3 \cdot 0}{25} = \frac{0}{25} = 0$$

$\log x$ $\ln x$

$\lg x$

$$\sin^2\frac{h}{2} = \frac{\overline{1-\cos h}}{2}$$

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

$$1$$

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

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

$$\omega^2 x = \frac{1}{1+\beta^2 x} \quad \Big\| \quad \frac{1}{\omega^2 x} = \frac{1}{\frac{1}{1+\beta^2 x}} = 1+\beta^2 x$$