

$$\left(1 + \frac{1}{n}\right)^n \rightarrow e$$

$a$ 

$$1 = \frac{a}{a}$$

$$+ 0 = a - a$$



$$\frac{1}{n} \geq \mathcal{O} \quad \left| \begin{array}{l} n \rightarrow \infty \\ \lim_{n \rightarrow \infty} \frac{1}{n} \equiv \mathcal{O} \end{array} \right.$$

$$f(x) > 0$$

$$\frac{1}{n} > 0$$



$$f(x) \geq \varepsilon > 0$$

$$\frac{1}{n} + \frac{1}{10^{10}} > 0$$

↑

$$\geq \frac{1}{10^{10}} > 0$$



$$\frac{n^4 \cdot \left(3 + \frac{1}{n}\right)}{n \cdot \left(-7 - \frac{5}{n^2}\right)} = n^3 \cdot \left(-\frac{3}{7}\right)$$

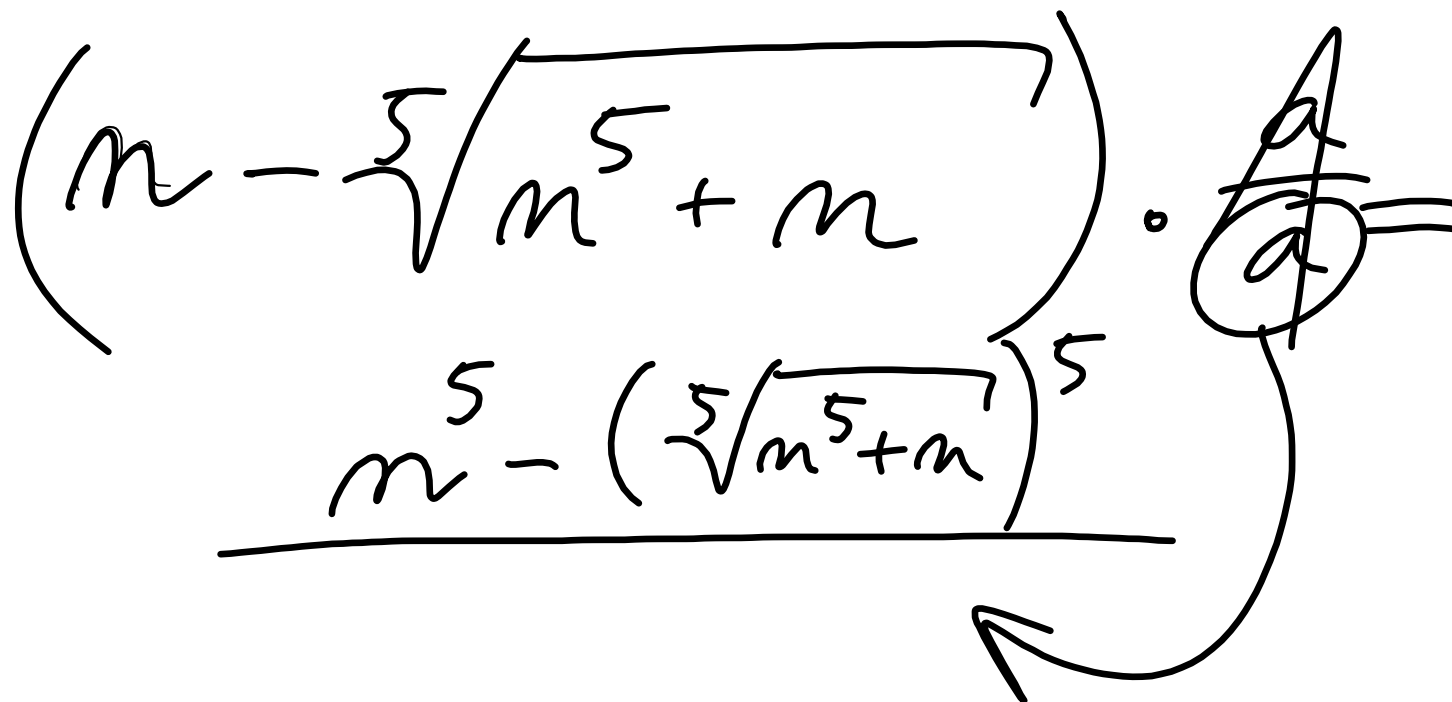
↓  
R

$$\lim_{n \rightarrow \infty} \frac{n! + \cancel{3^n} - \cancel{4n}}{(n+1)! - \cancel{7n^5}}$$

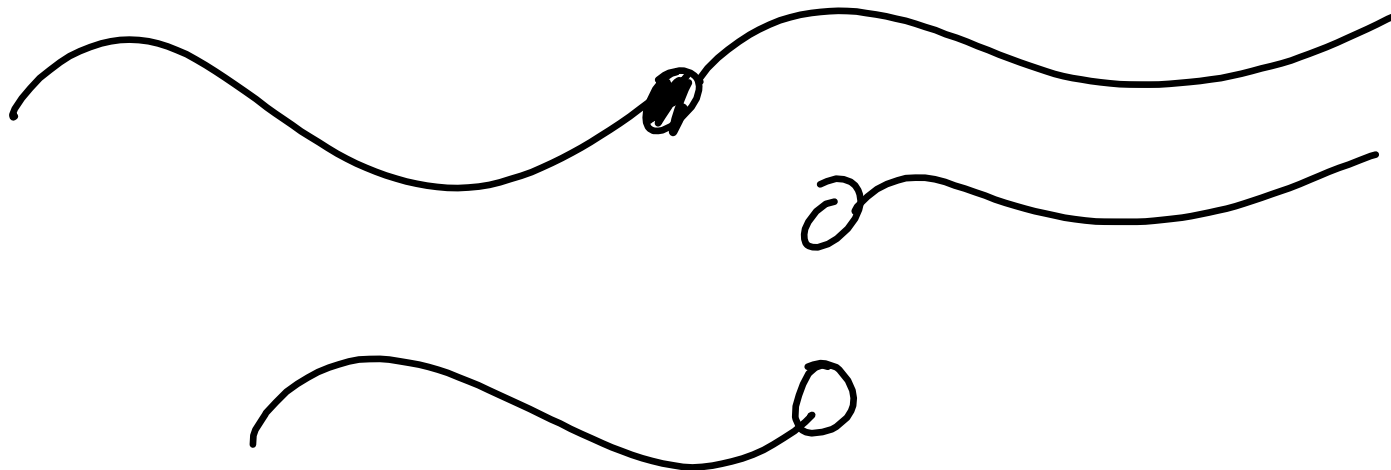
$$\frac{n!}{(n+1) \cdot n!} = \frac{1}{n+1} \rightarrow 0$$

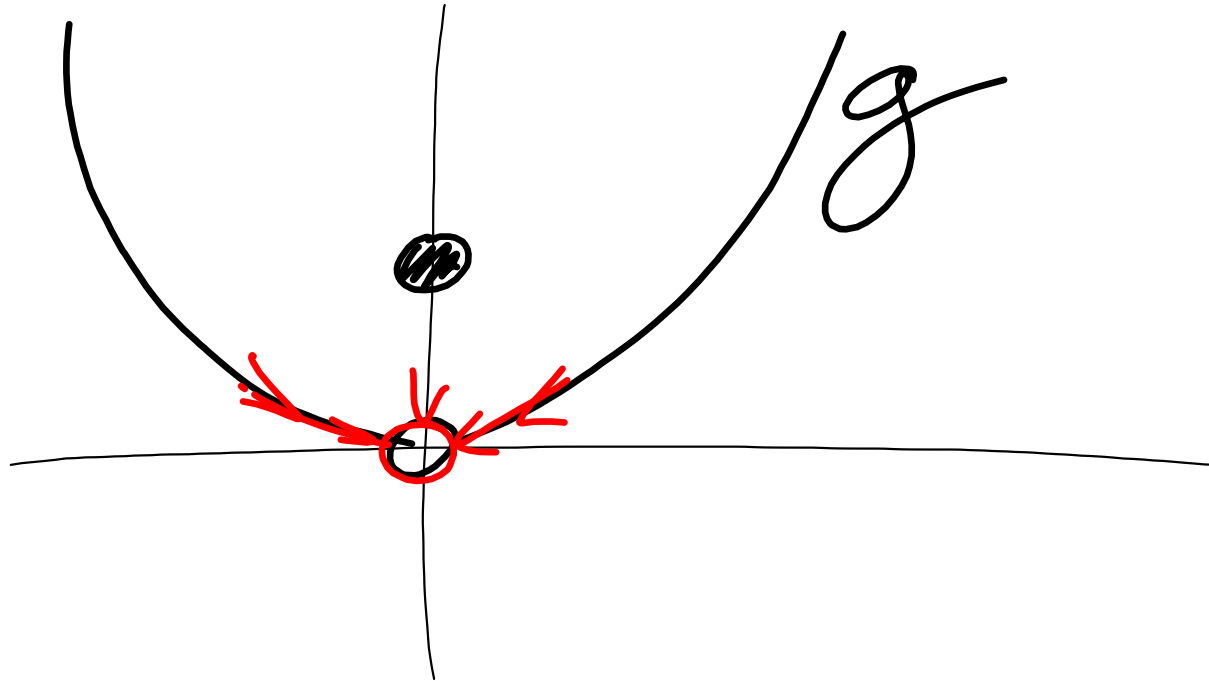
$$\frac{3^n}{n!} \rightarrow 0$$

$$\frac{1}{n} \sqrt[5]{n+3} = \sqrt[5]{\frac{1}{n^5} \cdot (n+3)}$$

$$\frac{(n - \sqrt[5]{n^5 + n}) \cdot \frac{a}{a}}{n^5 - (\sqrt[5]{n^5 + n})^5}$$
The image shows a handwritten mathematical expression. The numerator is  $(n - \sqrt[5]{n^5 + n})$  multiplied by a circled  $\frac{a}{a}$ . The denominator is  $n^5 - (\sqrt[5]{n^5 + n})^5$ . A horizontal line is drawn under the denominator. An arrow points from the circled  $\frac{a}{a}$  to the denominator, indicating a simplification step.

$$a^2 - b^2 = (a - b) \cdot (a + b)$$
$$a^3 - b^3 = (a - b) \cdot (a^2 + ab + b^2)$$
$$\vdots$$



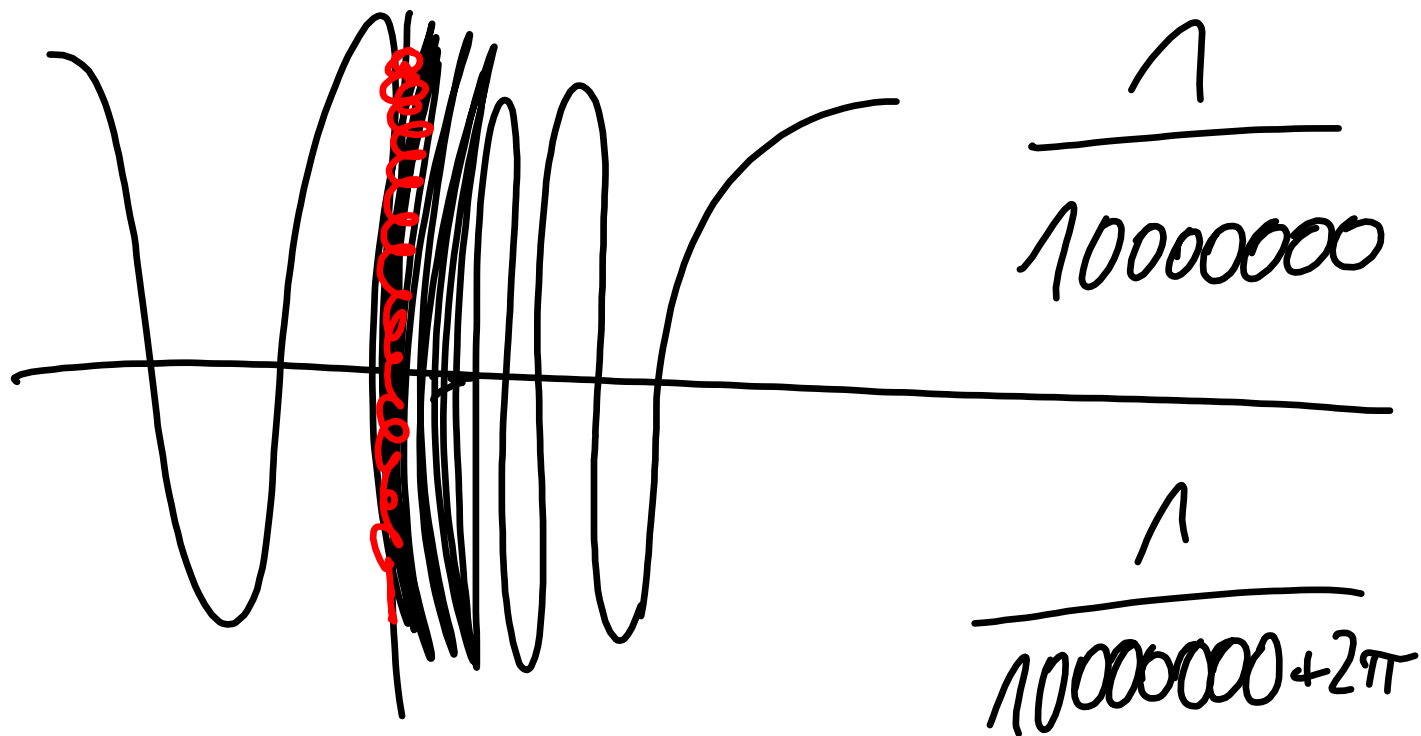


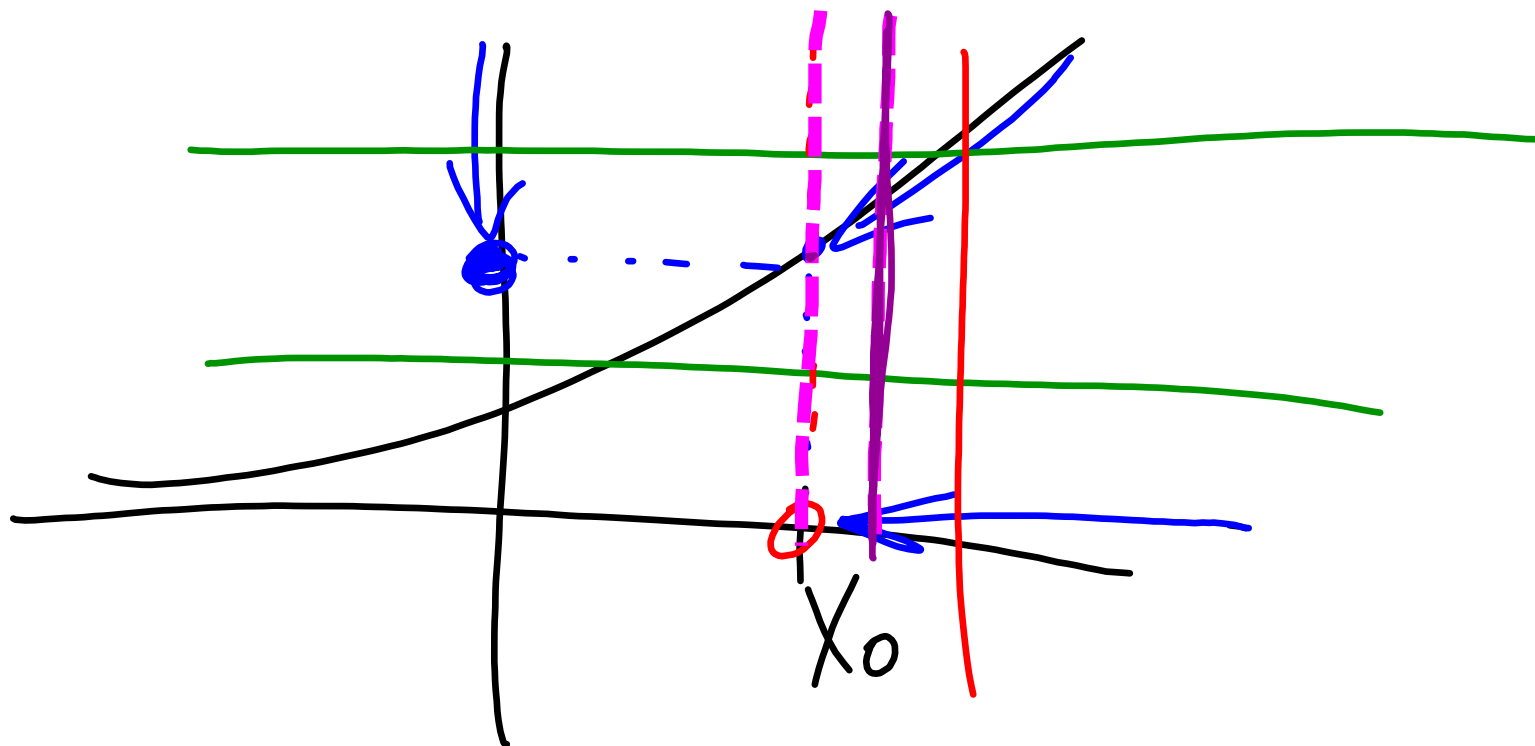


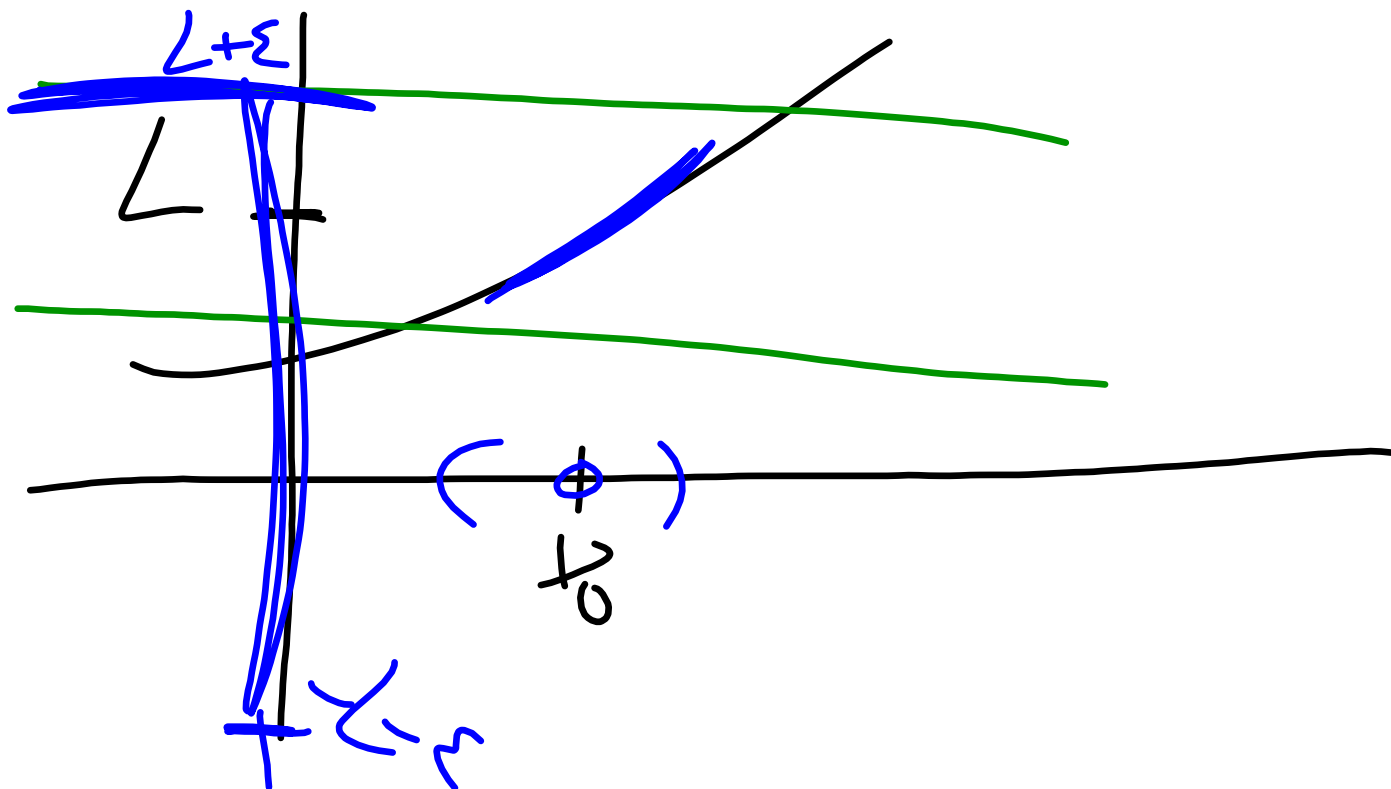
$$\lim_{x \rightarrow x_0} f(x) = L$$

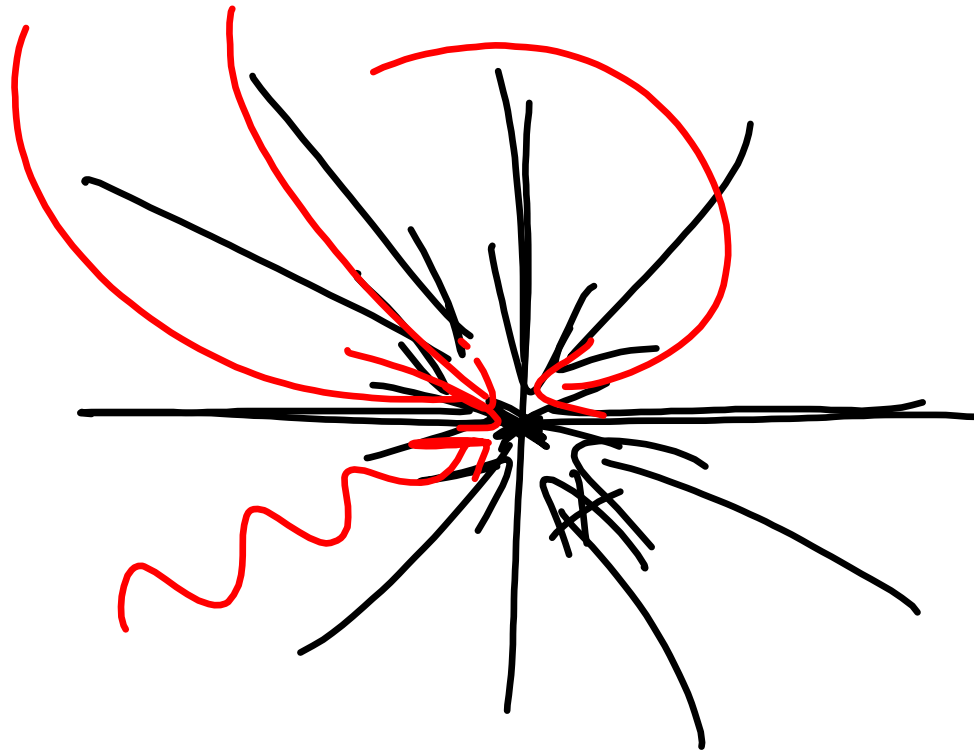
$$\lim_{x \rightarrow 0^+} \sin \frac{1}{x} = \sin(\infty) = \text{X}$$

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

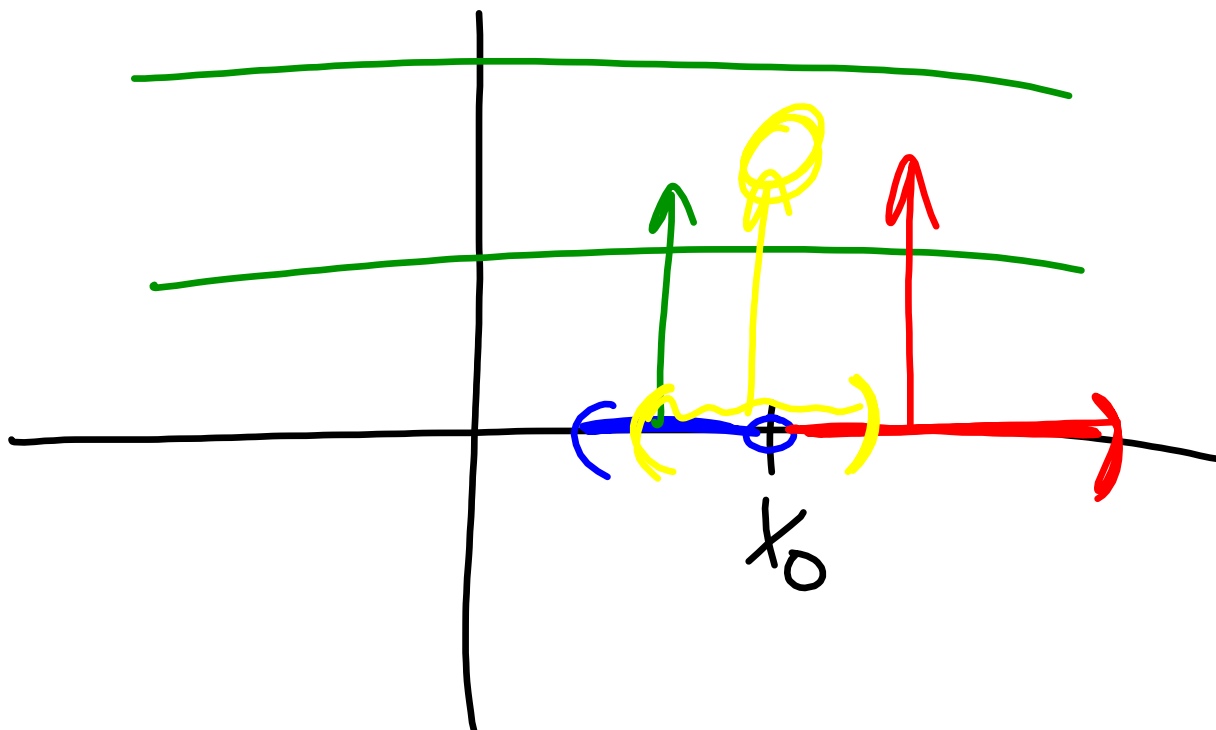






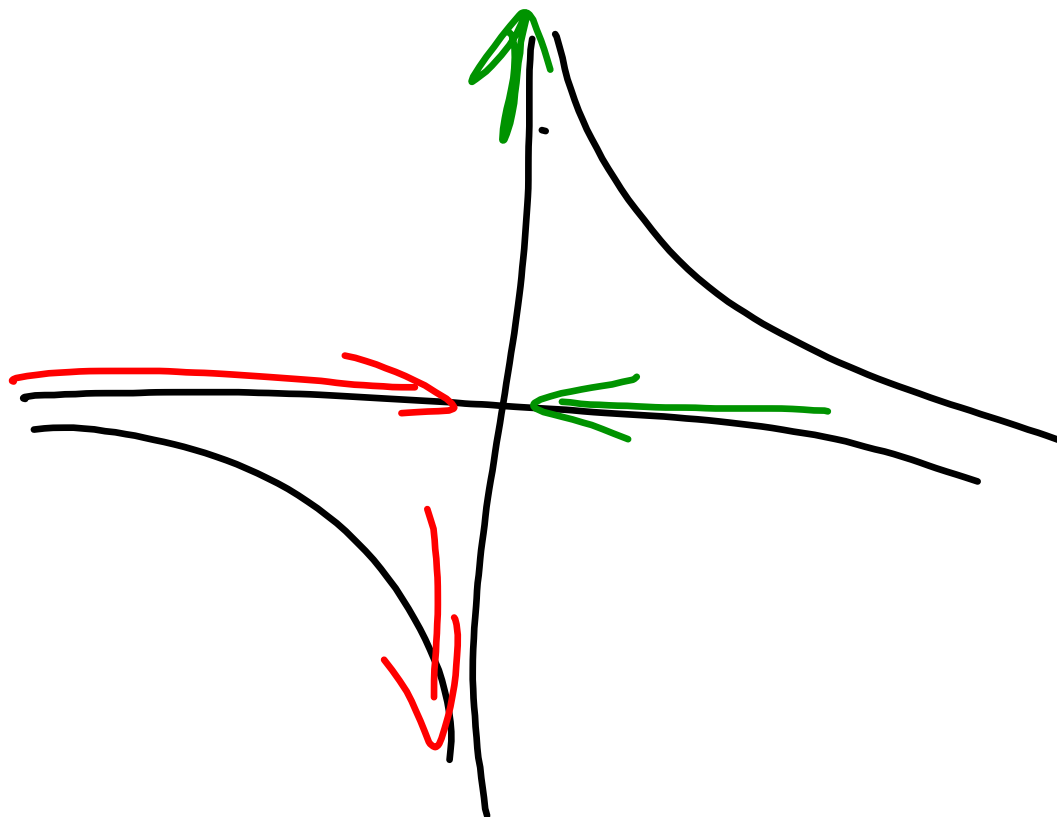


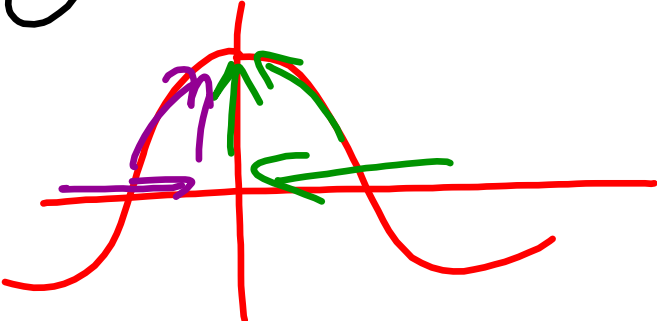
$\mathbb{R}^2$



$$\lim_{x \rightarrow 5} x \cdot \sin \frac{1}{x} = \underline{\underline{5 \cdot \sin \frac{1}{5}}}$$





$$\lim_{x \rightarrow 0^+} \frac{5}{1 - \cos x} = \frac{5}{1 - \underbrace{\cos 0^+}} = \frac{5}{1 - (1^-)}$$

$$= \frac{5}{0^+} = +\infty$$

