

### Homeworks:

1. Examine the limit

$$\lim_{x \rightarrow 0} \sin \frac{1}{x}.$$

Justify your claim

2. Compute

$$\lim_{x \rightarrow 0^+} \left( \frac{1}{x \log x} - \frac{x}{\log x} \right).$$

3. Compute

$$\lim_{x \rightarrow 0} \left( \frac{\sin x}{x} \right)^{\frac{1}{1 - \cos x}}.$$