

9th Assignment - till 14th December 23:59

1. Find the limit:

$$\lim_{x \rightarrow 0} \frac{x(e^x + 1) - 2(e^x - 1)}{x^3}.$$

2. Find the limit:

$$\lim_{x \rightarrow 0} \cot x - \frac{1}{x}.$$

3. Find the intervals of monotonicity, find the extrema, try to sketch graph:

$$f(x) = e^{-x}(x^2 - x + 1).$$