

Exercise 1. Compute $\limsup_{x \rightarrow \infty} (1 + \frac{1}{x}) \sin(x)$ and $\liminf_{x \rightarrow \infty} (1 + \frac{1}{x}) \sin(x)$?

Exercise 2. Recall part (ii) of Proposition 4.23: For measurable f and A ,

$$m(A) \inf_A f \leq \int_A f dm \leq m(A) \sup_A f.$$

Does this statement hold when inf and sup are replaced by resp. $\text{ess inf } f$ and $\text{ess sup } f$?

Also complete exercises 4.4 through 4.9.