

Math 601B Homework # 5
Due Friday, May 7

1. Let $(a_n), (b_n)$ be sequences of real numbers indexed by \mathbb{N} and let ω be the probability measure associated to a non-principal ultrafilter on \mathbb{N} . Assume that $\omega\text{-}\lim a_n, \omega\text{-}\lim b_n \neq \infty$, and show that

$$\omega\text{-}\lim a_n + \omega\text{-}\lim b_n = \omega\text{-}\lim(a_n + b_n).$$

2. Let ω be the probability measure associated to a non-principle ultrafilter on \mathbb{N} . Show that $\text{Cone}_\omega \mathbb{R} \cong \mathbb{R}$.
3. Show that the asymptotic cone of a geodesic space is itself geodesic.