Real Analysis 1, MATH 5210

Homework 11, Section 4.5

Due Tuesday December 9, 2014 at 3:00

Prove each of the following.

Problem 4.37. Let f be an integrable function on E. Prove that for each $\varepsilon > 0$, there is $N \in \mathbb{N}$ for which $n \geq N$ implies $\left|\int_{E_n} f\right| < \varepsilon$ where $E_n = \{x \in E \mid |x| \geq n\}$.

Problem 4.39(ii). Given that f is integrable over E, prove that if $\{E_n\}_{n=1}^{\infty}$ is a descending countable collection of measurable subsets of E, then

$$\int_{\cap_{n=1}^{\infty} E_n} f = \lim_{n\to\infty} \int_{E_n} f.$$