

HOMEWORK #8Due Wed Dec 10, 2014 in class

- *1. Suppose $\{f_n\}_{n=1}^{\infty}$, f are measurable functions on a measure space $(\Omega, \mathcal{F}, \mu)$. Suppose that $f_n \rightarrow f$ in meas. as $n \rightarrow \infty$. Assume that $|f_n| \leq g$ for all n where $\int |g| d\mu < \infty$. Prove that $\int_{\Omega} f_n d\mu \rightarrow \int_{\Omega} f d\mu$ as $n \rightarrow \infty$.

(Hint: Do a proof by contradiction.)

Remark: In class we proved this when $\mu(\Omega) < \infty$ but it actually holds more generally, though the proof given in class does not generalize.

Problems 1.7.1, *1.7.2, 1.7.5

*2.2.3, 2.2.6 (Hint: use Fubini's theorem),
