Math 524

Homework due 11/18/09

Reading from Stein & Shakarchi: Chapter 2, §1, §2 and §3.

Exercises from Stein & Shakarchi: Chapter 2: exercises 6, 9, 10, 15.

Problem 1: Let $(X, \mathcal{M}, \mu)$ be a complete measure space. Assume that $E_n \in \mathcal{M}$ with $\mu(E_n) < \infty$ for each $n \in \mathbb{N}$ and that $\chi_{E_n} \to f$ in $L^1(\mu)$. Prove that f is (equal μ-a.e to) the characteristic function of a measurable set.