

Math 524

Homework due 11/24/10

Reading from Stein & Shakarchi: Chapter 2: §1, §2. Chapter 6: §2.

Exercises from Stein & Shakarchi: Chapter 2: 5, 6, 9, 10, 15.

Problem 1: Let (X, \mathcal{M}, μ) 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 $\chi_{E_n} \rightarrow f$ in $L^1(\mu)$. Prove that f is (equal μ -a.e. to) the characteristic function of a measurable set.