

MA677 Fall 2009
Homework Problem Set #1
August 28, 2009

Assignment 1. Read chapter 4 of Stein-Shakarchi on Hilbert space theory. These problems on pages 193-194 are due Wednesday, 9 September 2009.

- (1) Problem 2. When does equality hold in the Cauchy-Schwarz inequality.
- (2) Problem 3. The Parallelogram Identity.
- (3) Problem 4. Completeness of $\ell^2(\mathbb{Z})$.
- (4) Problem 5. Relations between L^1 and L^2 .
- (5) Problem 6. Certain dense subspaces of $L^2(\mathbb{R}^d)$.