

Exercise 1

Spring 2005

- (1) Prove proposition 1 at Page 42: “The quotient space with the quotient norm is also a Banach space.”
- (2) The space $L^p(a, b)$ is separable. (A countable dense set is the collection of all simple functions $\phi = \sum_{i=1}^n c_i 1_{(a_i, b_i)}$ with rational a_i, b_i, c_i .)
- (3) The space $L^\infty(a, b)$ is not separable.