

Hilbert spaces-Math 546

Due date: Wednesday October 5

- (1) Let $A = M_n(\mathbb{C})$ be the algebra of $n \times n$ matrices and ordinary multiplication and norm $M_n(\mathbb{C}) = B(\ell_2^n)$. Show that A has no non-trivial ideals.
- (2) Find all the maximal ideals in $C(K)$, K a compact space.
- (3) Describe the Gelfand transform for $A = L_1(\mathbb{R})$ with respect to convolution.
- (4) Describe all the ideals in $B(\ell_1)$ and $B(\ell_2)$.