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 $M_n(\mathbb{C}) = B(\ell^n_2)$. 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 $B(\ell_2)$. 
