Math 871 Topology I
Problem Set 11

1. Let $\mathcal{T}_1$ and $\mathcal{T}_2$ be topologies on X such that both $(X, \mathcal{T}_1)$ and $(X, \mathcal{T}_2)$ are compact Hausdorff spaces. Show that if there exists $U \in \mathcal{T}_1$ such that $U \notin \mathcal{T}_2$, then there exists $V \in \mathcal{T}_2$ such that $V \notin \mathcal{T}_1$.

2. Let A and B be disjoint compact subspaces of the Hausdorff space X. Show that there exist disjoint open sets U and V such that $A \subseteq U$ and $B \subseteq V$.