Math 256A. Problem Set #1

Due Thursday, 10 September

1. Let Y be a closed subset of $\mathbb{A}^n$. In addition to its relative topology, the set Y has a topology that can be defined using subsets of $A(Y)$, analogously to the definition of the topology on $\mathbb{A}^n$. Specifically, elements $f \in A(Y)$ can be viewed as functions from Y to k, and therefore $Z(T)$ is defined for all subsets $T \subseteq A(Y)$. One can then show that a result similar to Prop. 1.1 holds for these sets $Z(T)$ (but you may assume this without proof).

   Show that these two topologies on Y are the same.

2. Exercise 1.3.

3. Exercise 1.8.

4. Exercise 2.1.

5. Exercise 2.2.