## Extra problem for Homework 3.

Let  $K_n \supset K_{n+1}$  be compact sets in a topological space X. Show that  $\bigcap K_n \neq \emptyset$ .

(**Hint:** If  $\bigcap K_n = \emptyset$  then  $X \setminus K_n$  is an open cover of  $K_1$  with no finite subcover.)