

GENERAL TOPOLOGY - SPRING 2017 - ASSIGNMENT 5

- 1) Show that if X is connected for the topology \mathcal{T} , it is connected for any coarser topology
- 2) Show that if S is a connected subset of a T_1 space with at least two elements, then $\text{card}(S) \geq \aleph_0$
- 3) Show that any pair of components are separated.
- 4) Show that the pathwise connected sets of any topological space partition the space.
- 5) Show that if the components of a compact space are open, then there are finitely many of them.
- 6) Show that a totally disconnected space is Hausdorff.