Hints and Extra Problems for Homework 8

Math 461, Fall 2006

7.3.8. Here is a hint for the second half of the question. When thinking about the intersection between two compact sets, consider the various ways to construct an identification space from two disjoint segments.

7.4.10. There is a typo in the last sentence. It should read: Then f is continuous if and only if *the graph of* f considered as a subspace of $X \times Y$ is compact.

Extra Problems

1. Prove that the converse to the statement in Problem 7.4.7 is false. That is: find a metric space in which not every closed bounded subset is compact.

2. Let τ and τ' be two topologies on the same set X.

(a) Suppose that $\tau \subset \tau'$. What does compactness of X under one of these topologies imply about compactness under the other?

(b) Show that if X is compact and Hausdorff under both τ and τ', then either $\tau = \tau'$, or they are not comparable.