Math 145A
Spring 2016

UPDATED GENERAL INFORMATION — FEBRUARY 29, 2016

Compactness of closed intervals

A proof that the Heine-Borel-Lebesgue Theorem implies compactness is given in the file `compactness-examples.pdf`.

Hints for the Quiz 3 study problems

In the interests of not giving everything away, these are deliberately a little sketchy. Items like definitions and statements of theorems are not covered.

(3) Look at regions in the plane with empty and nonempty intersections.

(5) What happens if X is the real numbers, A is a closed interval, and B is obtained from A by deleting one endpoint?

(6) If $x \in X$ why is $\{x\}$ Hausdorff in the subspace topology? How many ways are there of putting a topology on $\{x\}$?

(7) Why can we choose the subspace to be a product of closed intervals? Note that the problem should end with "D." and that "properties.]" should be omitted.

(8) If $A_i, B_i \subset X_i$ for $i = 1, 2$, then we have $(A_1 \cap A_2) \times (B_1 \cap B_2) \quad = \quad (A_1 \times B_1) \cap (A_2 \times B_2)$.

(9) The word "connected" should be added at the end. — Recall what we have shown about connected subsets and continuous mappings, and likewise for Cartesian products.

(10) In a circle, the complement of every one point subset is connected.