Math 145B
Spring 2015

UPDATED GENERAL INFORMATION — MARCH 22, 2014

Office hours

Standard walk-in office hours will be from 1:30 P.M. to 2:30 P.M. on Mondays in Surge 221. Other times can be arranged if necessary; this can be done face to face after class or by electronic mail.

The first quiz

Coverage will include Sections 0.6 and I.1 – I.3. Note that some of the online files for these sections have addenda with names of the form `notes*a.pdf`. Also, the coverage of Section I.2 included a discussion of the example in `trig-example.pdf`. The corresponding sections of Munkres and Crossley are given in `topics145B.pdf`.

Reviewing the homework problems in `exercises1s15.pdf` and `solutions01s15.pdf` is also strongly recommended. The files `polya.pdf`, `math205Asolutions00.pdf` and `mathproofs.pdf` contain remarks which might be helpful in attempting to solve the exercises.

Here are some further questions to consider in preparation for the quiz:

If $f; X \to Y$ is continuous and C is a connected/arc component of X, explain why $f[C]$ is contained in a connected/arc component of Y.

Prove or give a counterexample: If C is a connected component of X, then C is an open and closed subset of X.

Suppose that X is a union of n connected/arcwise connected subsets $A_1, \cdots A_n$. Explain why X has at most n connected/arc components.

Suppose that X is a complete metric space and C is a connected component of X. Prove that X is complete. Also, prove or give a counterexample if "connected component" is replaced by "arc component."

Suppose that X is a connected complete metric space and U is a nonempty proper subset of X. Explain why U is not complete with respect to the subspace metric.

If $\mathcal{A}_2$ is the family of arcwise connected subsets of $\mathbb{R}^2$, what is the cardinality of $\mathcal{A}$? How does it compare to the cardinalities of (i) the family of connected subsets, (ii) the family of closed subsets, (iii) the family of all subsets? In each case, "subsets" refers to subsets of $\mathbb{R}^2$.