Math 205A
Fall 2008
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UPDATED GENERAL INFORMATION — OCTOBER 28, 2008

Here are some suggestions for study in connection with tomorrow's exam. These are meant as a guideline to recognize the important points. Not everything listed will be covered, and although an effort has been made to ensure that the list is consistent with the problems on the test, for several reasons this cannot be guaranteed. The questions are not designed to be hard, but they may be formulated from slightly different viewpoints than one finds in the notes or the exercises.

Basic concepts. It is important to know the basic definitions of objects like metric spaces, topological spaces, the topological space associated to a metric space, closed sets, limit points, closures, a few characterizations of continuous functions, the definition of uniform continuity, the subspace metric and/or topology, the product topology, the definition of a compact topological space and the definition of a complete metric space.

Proofs of basic results. An active understanding of the following types of results will be assumed: The results on closed sets and limit points, the proof that one point subsets in a metric space are closed, the Hausdorff Separation Property for metric spaces, the characterization of continuous maps into a product space, the continuity of the distance function in a metric space, the results on compact topological spaces in Section III.1 (with some exceptions in the next paragraph), and the relation between closed and complete subsets in a complete metric space.

Acquaintance with basic results. Knowing and understanding the statements of results like the equivalence of definitions of the closure of a subset, the result on relative closure, the fundamental compactness property for a closed interval, the theorem on products of compact spaces, the convergent subsequence property of compact metric spaces, the completeness property for the real numbers, the completeness of the spaces of bounded and bounded continuous real valued functions on a set.

Knowledge of examples. It will be helpful to know examples like the discrete and indiscrete topology, topologies which do not come from metrics, complete metric spaces which are not compact, complete metric spaces in which closed bounded subsets are not necessarily compact, and examples in which the closure of the ε-disk about a point is not the set of all points whose distance from the given point is $\leq \varepsilon$.