

MATH 145 Final Study Guide

June 3, 2008

1. VOCABULARY (for application, not regurgitation)

topology, open set, closed set, basis, subspace, interior, closure, limit point, boundary, neighborhood, Hausdorff space, continuity, homeomorphism, metric, metric space, quotient map, open map, closed map, projection map, retraction map, quotient space, (locally) connected space, separation, path, (locally) path-connected space, (path) components, compact space

2. CONCEPTS

How does one show that...

- (a) a set A is contained in a set B ?
- (b) property R holds for every element of set S ?
- (c) set A equals set B ?
- (d) a collection is a topology?
- (e) one topology is finer than another?
- (f) a set is open? closed?
- (g) a point $x \in \bar{A}$? $x \in A'$? $x \in \partial A$?
- (h) a space is Hausdorff? connected? compact?
- (i) a function is continuous?

What do the...

- (a) open sets in the product topology look like?
- (b) basis elements for the product topology look like?
- (c) basis elements in the order topology look like?
- (d) open sets in the subspace topology look like?
- (e) opens sets in the quotient topology look like?
- (f) opens sets in the metric topology look like?

3. KNOW THE THEOREMS WHICH WERE USEFUL ON PREVIOUS EXAMS