

MATH 429 – Fall 2005
Review sheet for Midterm Exam 2

Concepts to be known

- Topological spaces
- The discrete topology, the indiscrete topology
- The standard topology and the lower limit topology on \mathbb{R} .
- The metric topology
- Topological bases
- The subspace topology
- The product topology, the box topology
- The order topology
- Limit points
- Closure and interior of a set
- Hausdorff spaces
- Continuity on topological spaces
- Topological embeddings
- Homeomorphisms
- Connected spaces
- Path-connected spaces
- Connected subspaces of the real line
- Compact spaces

Theorems to be known

All theorems from Chapter 2 and Chapter 3 (except Sections 22, 25, 28-29).
You will be asked to state two definitions (from Sections 23, 24 and 26).

Practice problems

- Page 152: # 2, 3, 12
- Page 158: # 8, 10
- Page 171: # 3, 4, 5, 6, 7, 8.
- **Problem.** Let X be a *compact* topological space. Show that every infinite subset of X has a limit point.