Review for Math 341 Midterm 2

The midterm covers the material covered in sections 3.3-3.4, 4.2-4.5 of the textbook.

Definitions to know:

1. Compact (p. 84 or from class)
2. Bounded (p. 84)
3. Open cover (p. 86)
4. Perfect set (p. 89)
5. Separated (p. 91)
6. Disconnected (p. 91)
7. Connected (p. 91)
8. Limit for a function (p. 104)
9. Continuous function (p. 109)
10. Uniform continuity (p. 117)
11. Intermediate value property (p. 124)
12. Increasing and decreasing (p. 125)

Theorems to know:

1. Heine-Borel Theorem (p. 84-5)
2. Theorem 4.4.8 (p. 118) (Continuous function on compact domain is uniformly continuous)
3. Intermediate Value Theorem (p. 120, 122-3)

You should be able to:

1. Know the properties of compact sets and how to determine if a set is compact
2. Determine if a set is perfect (especially properties of the Cantor set)
3. Determine if a set is disconnected or connected and know the consequences
4. Find the limit of a function if it exists or be able to prove one does not exist
5. Determine if a function is continuous at a point and what this implies
6. Determine if a function is uniformly continuous and the consequences
7. Use the intermediate value theorem
8. Find if a function is increasing or decreasing