

Notes on Exam 2, Math 554, Summer 2005

1. Exam 2 is Wednesday June 8 and it covers sections 1.4, 1.5, 1.7, 2.1, 2.2, 2.3, and part of 2.4. (In section 2.4, you are responsible for the homework, the definitions, and the statement of the Theorems. You are not responsible for the proof of either version of the Bolzano-Weierstrass Theorem.)
2. Be able to define “bounded above”, “upper bound”, “supremum”, “one-to-one”, “onto”, “have the same cardinality”, “finite”, “countable”, “uncountable”, “sequence”, “the sequence converges”, “the limit of a sequence”, “monotone increasing”, “monotone decreasing”, “monotone”, and “limit point”.
3. Be able to state: the least upper bound property of the real numbers, the Archimedean Property of the real numbers, the theorem about monotone sequences, the nested interval property, a version of the Bolzano-Weierstrass Theorem.
4. Be able to prove: $(0, 1)$ is uncountable, the set of positive rational numbers is countable, the limit of a product of two sequences is the product of the limits of the individual sequences, the theorem about monotone sequences, the nested interval property.
5. The material on the old exams which is covered on your exam 2:
 - (a) Exam 1 (2005): 1, 2, 3, 4, 5, 6, 7.
 - (b) Exam 1 (2004): 1, 2, 3, 4, 5, 6, 7.
 - (c) Exam 1 (2000): 1, 2, 3, 4, 5, 6, 7, 8.
 - (d) Exam 2 (2004): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.
 - (e) Exam 2 (2000): 1, 2, 3, 4, 5, 6, 7, 8.
 - (f) Exam 3 (2004): 1, 7.
 - (g) Exam 3 (2000): 1, 2, 3, 4, 5, 6, 7.
 - (h) Final Exam (2004): 4, 10, 14, 16.
 - (i) Final Exam (2000): 4, 5, 6, 8, 9, 14.