## Mathematics 1160 — Math, A Human Endeavor

Topics for Exam 2

Spring 2009

You are responsible for all assigned readings (textbook and handouts), assigned homework, and the topics covered in slides and lectures. The following list of topics may help you in your preparation for the exam.

- Everything covered on the first exam Chapters 1 and 2
- Sets that are equal, equivalent
- Infinite Sets and Their Cardinalities, proving a set has cardinality  $\aleph_0$  (Aleph–Null)
- Sec 3.1 Statements and Qualifiers
  - 1. compound statements, logical connectives (and, or)
  - 2. negation (not)
  - 3. symbols  $(p, q, \wedge, \lor, \sim)$
  - 4. universal quantifiers, existential quantifiers, negation of quantified statements
  - 5. sets of numbers (Natural, Whole, Integers, Rational, Real, Irrational)
- Sec 3.2 Truth Tables and Equivalent Statements be able to fill out a Truth Table and determine whether two statements are equivalent
- Sec 3.3 The Conditional And Circuits
  - 1. conditional  $(\rightarrow)$ , antecedent, consequent
  - 2. truth values for conditional
  - 3. tautology
  - 4. negation of a conditional
  - 5. equivalent logical statement  $(p \rightarrow q \ \equiv \ \sim p \lor q)$
  - 6. circuits series and parallel
  - 7. converting between logical statements and circuits and vice–versa
  - 8. simplifying conditionals and circuits
- Sec 3.4 More on the Conditional
  - 1. Direct Statement
  - 2. Converse
  - 3. Inverse
  - 4. Contrapositive
  - 5. Equivalences (Direct and contrapositive; converse and inverse)
  - 6. Alternative Forms and common translations of  $p \to q$
  - 7. Biconditionals