Review for Exam 1

The exam will be closed notes, closed book, and no calculators. The only thing you will have is the statement of the Master Theorem.

The exam may include true/false, multiple choice, short answer, and short proofs. When doing proofs, you must explain all of your steps.

Suggestion: carefully review all lab problems and class notes. Reread relevant sections in text.

1. Proof by induction - review homework problems. At least one of the homework problems will appear on the exam.
2. Asymptotic Notation
   - Know the definitions of $\Omega, \Theta, \omega, O$ and o.
   - Know how to use the definitions in a proof.
   - Know how to use limits to determine complexity of a function. Be able to use L'Hopital's Rule.
   - Know the common growth functions shown in figure 2.3.2 on page 50 of your text.
   - Know how to do basic manipulation of exponentials and logs.
   - Know how to sum arithmetic series and geometric series.
   - Know how to experimentally calculate the complexity.
3. Solving Recurrences
   - Guess and check method with induction.
   - Iteration method (e.g. telescoping).
   - Be able to apply the Master Theorem.