CSE 311: Foundations of Computing I Assignment #5 April 30, 2014 due: Friday, May 9, 1:30 p.m., *before lecture begins*

Bundles: The problems in each homework assignment will be divided into 2 groups (to facilitate distribution to grading TAs). You will turn in 2 corresponding bundles. Write your name in the *upper left corner* of each bundle's top page, with your last name printed clearly in CAPITAL LETTERS. Each bundle should be stapled separately. We don't supply the stapler.

This week's turnin bundles: (A) problems 1–2, (B) problems 3–5.

Textbook numbering labeled "6th edition" refers to the textbook's Sixth Edition. Numbering that is unlabeled refers to the Seventh Edition.

- 1. Section 5.1 [6th edition: Section 4.1], exercise 14. Use mathematical induction.
- 2. Section 5.1, exercise 60 [6th edition: Section 4.1, exercise 56].
- 3. Section 5.1 [6th edition: Section 4.1], exercise 34. Use mathematical induction.
- 4. Use mathematical induction to prove that $n! < n^n$ whenever n is an integer greater than 1.
- 5. Define the Fibonacci numbers as follows: f(0) = 0, f(1) = 1, and f(n) = f(n-2) + f(n-1) for all integers $n \ge 2$. Prove by induction that, for all integers $n \ge 2$, the number of iterations used by Euclid's algorithm to compute gcd(f(n+1), f(n)) is n-1.