CSE 311: Foundations of Computing I
Assignment #8
May 24, 2010
due: Wednesday, June 2, 1:30 p.m.

In all the textbook exercises, the phrase "deterministic finite-state automaton" means an ordinary finite-state automaton as we've been using that name in lecture.

1. Let $M = (S, I, f, s_0, F)$ be a finite-state automaton, let $s \in S$, $x \in I^*$, and $y \in I^*$. Prove that
$$f(s, xy) = f(f(s, x), y)$$
by induction on $|y|$, the length of the string y.

2. Section 12.3, exercise 16. Express your answer as a regular expression.

3. Section 12.3, exercise 24.

4. Section 12.3, exercise 42.

5. Section 12.4, exercise 6, parts c and d. In addition, give a finite-state automaton for the set in part c.

6. Section 12.4, exercise 22.