CSE 322: Introduction to Formal Models in Computer Science
Assignment #2
January 18, 2002
due: Friday, January 25

1. Exercise 1.10.

2. Exercise 1.12(b).

3. In Example 1.15 on page 52, label the start state q, the two states at the top of the diagram r_0 and r_1 from left to right, and the three states at the bottom s_0, s_1, and s_2 starting with the accept state and going clockwise around the cycle.

   (a) Use the construction given in Theorem 1.19 to convert this NFA into an equivalent DFA.

   (b) Explain how your DFA from part (a) relates to the construction given in the proof of Theorem 1.12. What does Example 1.15 have to do with the union operation?

4. Exercise 1.6(b).

5. Let L be the language accepted by the NFA of Example 1.15 on page 52. Use the construction given in the proof of Theorem 1.23 to give the state diagram of an NFA recognizing the language $L \circ L$.

6. Problem 1.24. Hint: Design an NFA for $A^{\mathcal{R}}$. Why is an NFA convenient for this?