1. Do Exercise 2.1.9c.

2. For $\Sigma = \{0, 1\}$, construct a dfa that accepts the set of all strings with an even number of 0’s and an odd number of 1’s.

3. Do Exercise 2.1.16. Hint: Given a dfa $M$ for $L$, describe how to modify $M$ to accept $L - \{\lambda\}$.

4. Do Exercise 2.2.6.

5. For $\Sigma = \{a, b\}$, construct an nfa that accepts the set of all strings that contain a substring satisfying the pattern $b^+ab^+ab^+$.

6. (Extra Credit) Let $\Sigma = \{0, 1\}$. Interpret a string $w$ as a binary number. Construct a dfa or nfa that accepts the set of all strings such that $w \mod 5 = 1$. Hint: Let each state correspond to a different value of $w \mod 5$. 