1.

a. What is the start state of $M_1$?

b. What is the set of accept states of $M_1$?

c. What is the start state of $M_2$?

d. What is the set of accept states of $M_2$?

e. What sequence of states does $M_1$ go through on input 1001?

f. Does $M_1$ accept the string 10011?

g. Does $M_2$ accept the string $\varepsilon$?

2. Give the formal description of the machines $M_1$ and $M_2$ pictured above.

3. Exercise 1.3 from Sipser. Page 84.
4. Give state diagrams of DFAs recognizing the following languages. In all cases the alphabet is \{0, 1\}.

   a) \{\textbf{w} \mid \textbf{w} \text{ contains at least four 1s}\}
   
   b) \{\textbf{w} \mid \text{the length of } \textbf{w} \text{ is at most 5}\}
   
   c) \{\textbf{w} \mid \textbf{w} \text{ contains at least two 0s and at most one 1}\}
   
   d) \{\textbf{w} \mid \textbf{w} \text{ starts with 0 and has odd length, or starts with 1 and has even length}\}

5. Exercise 1.20, a through h, page 84