1. Question 1.1 from Sipser's text, but for the following two machines (a solution is given in the text for the question there).

![Machine M3](image1)

![Machine M4](image2)

2. Question 1.6 (2nd edition of Sipser's text) or 1.4 (1st edition), parts a,b,e,h,i,j,l,m,n.

3. Question 1.5 (2nd edition of Sipser's text), parts h and c (I recommend attempting them in that order).

   The question is to consider the complements $\overline{L}$ of the languages $L$ that are described. Then, first, construct a DFA for the complement language $\overline{L}$, and using that DFA, give a second DFA to recognize the language $L$.

   Part h. $L_1 = \{ w | w$ is any string except $a$ or $b \}$. So what is $\overline{L_1}$?

   Part c. $L_2 = \{ w | w$ contains neither the substring $ab$ nor the substring $ba \}$. 