1. Draw a TM state diagram for a single tape TM that when given input $w \in \{0, 1\}^*$ shifts $w$ one tape square to the right, resulting in $\sqcup w$ on the input tape.

2. Sipser 3.8b: Give an implementation-level description of a TM that decides the language $L = \{w | w$ contains twice as many 0s as 1s $\}$. The book gives a solution for 3.8a that gives an idea of an appropriate implementation-level description of a TM.

3. Sipser 3.18: Show that a language is decidable iff some enumerator enumerates the language in short lexicographical order.

4. Sipser 3.19: Show that every infinite Turing-recognizable language has an infinite decidable subset. Hint: consider the previous question.

5. Sipser 4.3: Let $\text{ALL}_{\text{DFA}} = \{ \langle A \rangle | A$ is a DFA and $L(A) = \Sigma^* \}$. Show $\text{ALL}_{\text{DFA}}$ is decidable.