Problem A: Show that if $A_1, \ldots, A_k$ are countable sets, then so is the Cartesian product $A_1 \times \cdots \times A_k$.

Problem B: Show that if $A$ is a countable set, then so is $A^*$.

Also work the following problems in Sipser:

Chapter 4: 3, 4, 5.

Chapter 5: 2, 5, 7.