1. (6 points) Let $L_{001}$ be the set of all binary strings which do not contain 001 as a substring, and let $L_{001}$ be the set of all binary strings which do contain 001 as a substring. Show that $L_{001}$ and $L_{001}$ are regular.

2. (5 points) Let $L$ be the set of all strings over \{0, 1, 2, 3\} such that the sum of the characters in the string is evenly divisible by 5. That is, $\sum_{i=1}^{n} a_i \equiv 0 \pmod{5}$. For example, $\varepsilon \in L$, 132211 $\in L$ but 13221 $\not\in L$. Show that $L$ is regular.

3. (6 points) Do Exercise 2.2.8 of our text.