Exercise sheet 5

1. Find deterministic finite automata to recognize the following languages
   a) The empty language, i.e. $\emptyset$
   b) The language consisting of only the empty string, ϵ (note the difference with the previous one)
   c) A singleton
2. Use the previous question and the theorems proved during the lecture to prove that every regular expression describes a language that is a regular language.
3. Find regular expressions to describe the following languages
   a) Strings with the nth last character 0, for a given natural number n.
   b) Strings that begin with 01.
4. Prove that every any regular language can be recognized by a finite state automaton that has only one accept state.
5. Problem 1.31 from Sipser's book.

to be completed...