1. Apply the algorithm of McNAUGHTON-YAMADA on the following automaton. Detail each step.

2. Prove that the problem

Input : Two finite automata $A_1, A_2$

Question : $L(A_1) = L(A_2)$?

is decidable.

3. Give a procedure which, given a finite automaton $A$, returns the smallest regular expression $e$ such that $L(A) = L(e)$.

(No need for more than a sentence)