Name: ....

Section 1.1: Finite Automata

These exercises reflect material from our text, *Introduction to the Theory of Computation*, by Michael Sipser, PWS Publishing Co., 1997.

Definitions

Define each of the following concepts:

(a) Finite automaton, $M = (Q, \Sigma, \delta, q_0, F)$, with its states, alphabet, transition function, start state, and accept states

(b) State diagram of a finite automaton, M

(c) $L(M)$, the language of a DFA, M

(d) Computation of a DFA, M

(e) Regular language

(f) Regular operations: union, concatenation, star

(g) Product of automata

Results

Prove or disprove:

Regular languages are closed under union and intersection.

Exercises

We will attempt to solve each of the following exercises as a community project in class today. Finish these solutions as homework exercises, write them up carefully and clearly, and hand them in at the beginning of class on Wednesday.

Exercises for Section 1.1, pages 83–84: 1, 2, 3, 4