

CSCI 2400 – Models of Computation

Homework 1

Problem 1. Prove that if A and B are languages over the same alphabet Σ then $(A B)^R = B^R A^R$.

Problem 2. Show that the following language is regular:

$$L = \{w : w \in \{a\}^* \text{ and } |w| = 3k + 1 \text{ for some } k \geq 0\}.$$

(Hint: construct the DFA that accepts the language.)

Problem 3. Show that the following language is regular:

$$L = \{w : w \in \{0, 1\}^* \text{ and } w \text{ contains substring } 110 \text{ and does not contain substring } 111\}.$$

(Hint: construct the DFA that accepts the language.)