CS 3530: Assignment 1e

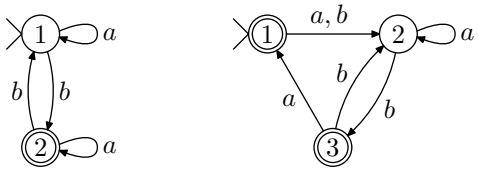
Fall 2023

Your Name Here

Exercise 1.21 (10 points)

Problem

Use the procedure described in Lemma 1.60 to convert the following finite automata to regular expressions. When ripping states, rip state 1 first, then state 2, then state 3.



(a) (b)

Solution

a: $a * b(a \cup ba * b)*$

b: $e \cup ((a \cup b)a * b)((a(a \cup b) \cup b)a * b) * (e \cup a)$

Exercise 1.28c (10 points)

Problem

Convert the following regular expressions to NFAs using the procedure given in Theorem 1.54. In all parts $\Sigma = \{a, b\}$. Note: a^+ is defined as aa^*, and should be constructed as the concatenation of a with a^*. Do not simplify, and do not skip steps. You only need to show the final state diagram.

c. $(a \cup bb^*)aa^*bb^*$

Solution