

Homework 5 — Due: Tuesday, October 4, 2022

Since we will be having Midterm Exam #1 in class on Tuesday, October 4, this homework need not be submitted and will not count toward the final grade. You might wish to consider doing it anyway, in preparation for the midterm.

1. Do Sipser, Exercise 1.14, page 86.
2. Do Sipser, Exercise 1.17, page 86. Do part (b) using the method in the proof of Theorem 1.39 (*i.e.* a powerset construction).
3. Do part (b) of the previous exercise again, this time using Brzozowski's method discussed in class.
4. Do Sipser, Exercise 1.19(a), page 86.
5. Do Sipser, Problem 1.31, page 88.
6. Prove that the following equivalence holds for regular expressions:

$$(A \cup B)^* = (A^*B^*)^*.$$