COMP 181

Models of Languages and Computation

Fall 2005

Homework 4

Due Tuesday, October 11, 2005

1. Problem 2.3.7, part (b), from the text, page 84. You need not use the construction of example 2.3.2, just come up with a regular expression for this automaton and illustrate how you got it.

2. Problem 2.4.5, part (b), from the text, page 90. (Hint: Let L be the language given in part (b). Intersect L with the regular language denoted by a^*ba^*b. The intersection gives the language $\{a^nba^nb : n \geq 0\}$. This language would be regular if L were regular. To show that L is not regular, you only have to show that $\{a^nba^nb : n \geq 0\}$ is not regular, and you can do this using the pumping lemma.

3. Problem 2.4.8, parts (a) and (c), from the text, page 91. (Hint: For part (c), recall that regular languages are closed under complementation and concatenation.)

EXTRA CREDIT: Problem 2.4.6 from the text, page 91.