COMP 181

Models of Languages and Computation

Fall 2005

Homework 7

Due Thursday, November 10, 2005

1. Problem 3.5.1 (a), from the text, page 148. Hint: Try expressing this language as the union of two other context-free languages.

2. Problem 3.5.2 (c), from the text, page 148. Hint: Let L be the specified language. Try intersecting L with $a^*ba^*ba^*b$. If L is context-free, this intersection should also be context-free. Show that this intersection is not context-free. Consider a word of the form $a^nba^nba^nb$ for a large value of n. Show that this word is in the intersection, but if the word is "pumped" as in the pumping theorem, for the right choice of i you obtain a word that is not in the intersection.

3. Problem 3.5.14 (a), from the text, page 149. Hint: Express this language as the union of three other languages.

EXTRA CREDIT: Problem 3.5.2 (a) from the text, page 148.