

COMS W3261: Theoretical Computer Science.

Instructor: Tal Malkin

Problem Set 5

Due: Tue, 10/09/07.

Reading: Chapter 1.4.

1. (a) Give an example of two languages L_1, L_2 such that L_1, L_2 are both not regular, but their union $L_1 \cup L_2$ is regular. Prove that your example works.
(b) Give an example of two languages L_1, L_2 such that L_1, L_2 are both not regular, and their union $L_1 \cup L_2$ is also not regular. Prove that your example works.
2. Problem 1.30 in text (finding the error in a “proof”).
3. Problem 1.46(d) in text (proving a language is not regular).
4. 1.47 (proving the language Y is not regular)
5. problem 1.53 (roughly, proving that checking addition of binary numbers is not a regular language)