CS 3500 Section C, Fall 2000

Homework 1 – due Tuesday, Aug. 29

Problem 1 Problem 0.3, page 26 of Sipser.

Problem 2 Problem 0.7, page 26 of Sipser.

Problem 3 Problem 0.10, page 27 of Sipser.

Problem 4 Let Σ be an alphabet of size s ($s \geq 1$).

(a) How many strings of length n can be formed with symbols from Σ?

(b) How many strings of length *at most* n can be formed with symbols from Σ?

Justify your answers.

Problem 5 Let L be a language over some finite alphabet. The language L^* (read "L star") is defined by

$$L^* = \{w \mid \text{there exists } k \geq 0 \text{ and } w_1, w_2, \ldots, w_k \in L \text{ such that } w = w_1 w_2 \ldots w_k\}.$$

Prove that $(L^*)^* = L^*$.

Problem 6 Problem 1.4(a,b,f,i,l), page 84 of Sipser.