

Homework 4 – due Tuesday, Feb. 15

Problem 1 Problem 2.10, page 121 of *Sipser*.

Problem 2 Prove that if L_1 is a CFL and L_2 is a regular set, then $L_1 \cap L_2$ is also a CFL.
Hint: Use a product construction to get a pushdown automata for the intersection.

Problem 3 Problem 3.2, page 147 of *Sipser*.

Problem 4 Give the complete transition table of a deterministic Turing machine recognizing the language

$$\{w \in \{0,1\}^* \mid w \text{ has an equal number of 0's and 1's}\}.$$

Is your machine *deciding* the language?

Problem 5 Problem 3.6, page 148 of *Sipser*.

Problem 6 Problem 3.13, page 149 of *Sipser*.

Problem 7 Problem 3.16, page 149 of *Sipser*.