

CS 3500: Introduction to the Theory of Computation

Problem Set 1

Due May 22, 2003

Problem 1 [20 Points]

Exercise 1.4 parts (a) - (e) on page 84 of Sipser.

Problem 2 [20 Points]

Exercise 1.5 parts (a) - (e) on page 84 of Sipser.

Problem 3 [10 Points]

Exercise 1.9 on page 85 of Sipser.

Problem 4 [15 Points]

Exercise 1.10 on page 85 of Sipser.

Problem 5 [10 Points]

Prove that regular languages are closed under intersection, that is, for every two regular languages L_1 and L_2 , $L_1 \cap L_2$ is also regular. (Hint: Use Exercise 1.10a and DeMorgan's Law)

Problem 6 [20 Points]

Exercise 1.13 parts (a) - (e) on page 86 of Sipser.

Problem 7 [5 Points]

Exercise 1.12 part (b) on page 85 of Sipser.