

Sections 9.3: Circuit Complexity

These exercises reflect material from our text, *Introduction to the Theory of Computation*, by Michael Sipser, PWS Publishing Co., 1997..

Basic Concepts

Define the following concepts:

- (a) Oracle
- (b) Oracle Turing machine, M^A
- (c) The class of languages P^A
- (d) Boolean circuits
- (e) Circuit family, (C_0, C_1, C_2, \dots)
- (f) Circuit (size) complexity of a language

Circuit Complexity

Solve the following exercises from Sipser's Chapter 9: 4, 5, 6

Do the following problems from Sipser's Chapter 9: 14, 15, 16

State a theorem relating the time complexity of a language to its circuit complexity.