

## Problem Set 9—Due March 15, 2005

**Problem 9.1.** Page 272, Problem 7.19.

**Problem 9.2.** A graph  $G = (V, E)$  is said to be *k-colorable* if there is a way to paint its vertices using colors in  $\{1, 2, \dots, k\}$  such that no adjacent vertices are painted the same color. When  $k$  is a number, by *kCOLOR* we denote the language of (encodings of) *k*-colorable graphs. The language *3COLOR* is NP-Complete. (You can assume this.) Use this to prove that the language *4COLOR* is NP-Complete, too.

**Problem 9.3.** Page 273, Problem 7.24.

**Problem 9.4.** Page 274, Problem 7.26.