

**22C : 231 Design and Analysis of Algorithms**  
**Spring 2006**  
**Homework 5**  
**Due on Tuesday, May 2**

You are expected to do the homework assignments on your own without consulting human and non-human sources (like the web, books other than the textbook) for the solutions. You are welcome to discuss the homeworks with your classmates, but you are not allowed to take away from the discussion any written record, electronic or otherwise, of the discussion.

This homework consists of Exercises 1, 2, 3, and 6 in Chapter 8 (10 points each) and the following problem (10 points):

Suppose that decision problem  $Y$  is poly-time reducible, in the Karp sense, to decision problem  $X$ . Suppose also that  $X$  is in NP. Argue that  $Y$  is in NP.