Name (PRINTED): _____

Student ID #: _____

Section # (or TA's: name and time) _____

CMSC 250 Quiz #6 Wednesday, Oct. 6, 2004

Write all answers legibly in the space provided. The number of points possible for each question is indicated in square brackets – the total number of points on the quiz is 30, and you will have exactly 15 minutes to complete this quiz. You may not use calculators, textbooks or any other aids during this quiz.

1. [22 pnts.] Disprove by counter example or Prove each of the following:

   a. For any two consecutive integers, their product is even. (For this you may assume a fact proven in class that a number that is not even is indeed odd and a number that is not odd is even, but note that we have not proven that when you have two consecutive integers one is even and one is odd.)

   b. For any positive integer a and any rational number b, $\frac{b}{a} \in Q$.

2. [8 pnts.] State Yes or No for each of the following (only a small justification for your answer is necessary not a complete proof). Assume a, b and c are integers and x, y and z are rationals for all of the following questions.

a. _____ $\forall x \in Z, \exists y \in Z, x + y = 0 \wedge x \neq y$

b. _____ Every rational number has a mulitplicative inverse (you can find anohter rational number that has its numerator and denominator exchanged).

c. _____ The sum of three consecutive integers is always even.

d. _____ The product of three consecutive integers is always even.