

Name (PRINTED): _____

Student ID #: _____

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

CMSC 250

Quiz #9

Wednesday, March 31, 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 **20** minutes to complete this quiz. You may not use calculators, textbooks or any other aids during this quiz.

1. [15 pnts.] Use regular induction to prove the following inequality.

$$\forall n \in \mathbb{Z} \text{ where } n \geq 6, \quad 4n < n^2 - 7$$

2. [15 pnts.] Use strong induction to prove the following statement.

Assume:

$$a_1 = 3, \quad a_2 = 5, \quad a_3 = 1, \quad \text{and} \quad a_n = 2a_{n-1} + 3a_{n-2} + 4a_{n-3} \forall n \in \mathbb{Z} \text{ where } n > 3$$

Prove that

$$\forall n \in \mathbb{Z}^+, \quad a_n \in \mathbb{Z}^{odd}$$