Math 214 Spring 2008

Quiz **4** **Linear Systems**

Name: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

Date: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯ **Friday February 15**

Time Begun: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯ Ron Buckmire

Time Ended: ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

Topic : Matrix Operations

The idea behind this quiz is for you to indicate your understanding of the basic algebraic operations involving Matrices.

Reality Check:

EXPECTED SCORE : ⎯⎯⎯⎯⎯⎯⎯**/10**   ACTUAL SCORE : ⎯⎯⎯⎯⎯⎯⎯**/10**

Instructions:

1. Please look for a hint on this quiz posted to `faculty.oxy.edu/ron/math/214/08/`

2. You may use the book or any of your class notes. You must work alone.

3. If you use your own paper, please staple it to the quiz before coming to class. If you don't have a stapler, buy one.

4. After completing the quiz, sign the pledge below stating on your honor that you have adhered to these rules.

5. Your solutions must have enough details such that an impartial observer can read your work and determine HOW you came up with your solution.

6. Relax and enjoy...

7. **This quiz is due on Wednesday February 20**, in class. NO LATE QUIZZES WILL BE ACCEPTED.

Pledge: I, ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯, pledge my honor as a human being and Occidental student, that I have followed all the rules above to the letter and in spirit.

A matrix of real numbers A is said to be **idempotent** if it's equal to its own square, in other words $A^2 = A$.

Consider the following matrices, identify which of them are idempotent.
EXPLAIN YOUR ANSWERS.

(a) $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \end{bmatrix}$

(b) $\begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}$

(c) $\begin{bmatrix} 1 & 1 \\ 0 & 0 \end{bmatrix}$

(d) $\begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}$

(e) $\begin{bmatrix} 1 & 1 \\ 0 & 1 \\ 0 & 1 \end{bmatrix}$