Math 214 Spring 2008

Quiz **7** *Linear Systems*

Name: _____

Date: _____ **Friday March 28**
Time Begun: _____ Ron Buckmire
Time Ended: _____

Topic : Eigenvalues and Eigenvectors of 2x2 Matrices

The idea behind this quiz is for you to indicate your understanding of the eigenvalues and eigenvectors associated with a matrix.

Reality Check:

EXPECTED SCORE : _____**/10** ACTUAL SCORE : _____**/10**

Instructions:

0. Please look for a hint on this quiz posted to `faculty.oxy.edu/ron/math/214/08/`
1. Once you open the quiz, you have **30 minutes** to complete, please record your start time and end time at the top of this sheet.
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. QUIZZES WITH UNSTAPLED SHEETS WILL NOT BE GRADED.
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 Monday March 31**, in class. NO LATE OR UNSTAPLED 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.

Math 214 Spring 2008 **SHOW ALL YOUR WORK** Quiz **Seven**

1. Consider the matrix $A = \begin{bmatrix} 0 & 2 \\ 2 & 3 \end{bmatrix}$ and its inverse, $A^{-1} = \begin{bmatrix} -3/4 & 1/2 \\ 1/2 & 0 \end{bmatrix}$.

a. (*2 points).* Find the eigenvalues, λ_1 and λ_2, of A

b. (*4 points).* Find the corresponding eigenvectors $\vec{x}_1$ and $\vec{x}_2$ of A

c. (*2 points).* Find the eigenvalues, $\hat{\lambda}_1$ and $\hat{\lambda}_2$, of A^{-1}.

d. (*2 points).* Confirm that the eigenvectors of A^{-1} are the same eigenvectors, $\vec{x}_1$ and $\vec{x}_2$, as A (from part b.)