

Quiz 1

Linear Systems

Name: _____

Date: _____

Time Begun: _____

Time Ended: _____

Friday January 25

Prof. Ron Buckmire

Topic : Operations on Vectors

The idea behind this quiz is for you to indicate your understanding of the material from Sections 1.1 and 1.2 of the text.

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.
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 January 28**, 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.

1. Consider $\vec{u} = \begin{bmatrix} 1 \\ -1 \\ 2 \end{bmatrix}$ and $\vec{v} = \begin{bmatrix} k^2 \\ k \\ -3 \end{bmatrix}$ where k is some unknown scalar.

(a) *3 points.* Find the values of the scalar k for which the two vectors \vec{u} and \vec{v} are **orthogonal** to each other.

(b) *2 points.* Is it possible to find values of k for which the two vectors \vec{u} and \vec{v} are **parallel** to each other? **EXPLAIN YOUR ANSWER.**

(c) *3 points.* Let $k = 0$ to produce a specific known vector \vec{v} . Compute $\text{proj}_{\vec{v}}(\vec{u})$ and $\text{proj}_{\vec{u}}(\vec{v})$.

(d) *2 points.* Are your answers in part (c) different? Is this a surprise? **EXPLAIN YOUR ANSWER.**