

## BONUS QUIZ 7

*Linear Systems*

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**Friday April 11**  
Ron Buckmire

---

**Topic :** Orthogonal matrices!

The idea behind this quiz is to provide you with an opportunity to illustrate your understanding of the properties of orthogonal matrices.

### 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/](http://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. **UNSTAPLED QUIZZES 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 April 14**, 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. *10 points.* **Poole, page 429, #6.** Let  $A = \begin{bmatrix} 1/2 & a \\ b & c \end{bmatrix}$ . Find all possible values of  $a$ ,  $b$  and  $c$  which make  $A$  an orthogonal matrix. RECALL, an orthogonal matrix is one in which the rows and columns are orthogonal to each other and each row and vector has magnitude one.  
**How many such matrices are there?**