Math 212 Spring 2015

BONUS Quiz **1**

Name: _____

Assigned: **Friday February 13**

Due: **Wednesday February 18**

Time Begun: _____
Time Ended: _____

Prof. Ron Buckmire

Topic : Equations of Planes and Projections

The idea behind this bonus quiz is to provide you with an opportunity to illustrate your understanding of analytic geometry involving planes, projections and vectors.

Reality Check:

EXPECTED SCORE : _____/**5**   ACTUAL SCORE : _____/**5**

Instructions:

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. NO LATE OR UNSTAPLED QUIZZES WILL BE ACCEPTED.

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 bonus quiz is due on Wednesday February 18**, at the beginning of class.

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.

Adapted from Question 1 on Exam 1 for Math 212 Fall 2014.
a. (*1 point*) Show that the equation of the plane $\mathcal{P}$ that containing the points $A(1, 0, 0)$, $B(1, 2, -2)$, and $C(0, -3, 4)$ is $x + y + z = 1$. **HINT: You do NOT Have to compute a vector cross product to answer this question!**

a. (*1 point*) Consider the plane $\mathcal{Q}$ given by the equation $x + y + z = 0$ and the plane $\mathcal{P}$ given by the equation $x + y + z = 1$. What can you say about the points of intersection of planes $\mathcal{P}$ and $\mathcal{Q}$? EXPLAIN YOUR ANSWER.

c. (*3 points*) What is the minimum distance between the planes $\mathcal{P}$ and $\mathcal{Q}$? SHOW ALL YOUR WORK AND GIVE AN EXPLANATION FOR HOW YOU KNOW THIS IS THE MINIMUM DISTANCE BETWEEN THE PLANES.