Quiz **2**   Multivariable Calculus

Name: _____   Assigned: **Friday February 6**

Due: **Monday February 9**

Time Begun: _____
Time Ended: _____   **Prof. Ron Buckmire**

Topic : Using Slices To Visualize Multivariable Functions

The idea behind this bonus quiz is to provide you with an opportunity to illustrate your understanding of functions in more than one variable.

Reality Check:

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

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. 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 at the beginning of class on Monday February 9.**
   NO LATE OR UNSTAPLED QUIZZES WILL BE ACCEPTED FOR GRADING.

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 three functions $f(x,y) = \dfrac{x^2}{4} + \dfrac{y^2}{9}$, $g(x,y) = 2x + 4y - 4$ and $h(x,y) = -\sqrt{4 - x^2 - y^2}$.

(a) (*3 points*) Sketch examples of x-cross-sections for each of the three surfaces given, i.e. hold x constant and draw graphs of f, g and h. **LABEL YOUR AXES AND GRAPHS CAREFULLY!**

(b) (*4 points*) Pick any two of the given surfaces and draw contour diagrams for your chosen surfaces. **CHOOSE AT LEAST THREE DIFFERENT VALUES FOR YOUR LEVEL SET, INCLUDING ZERO!**

(c) (*3 points*) Classify each of the two surfaces you chose in part **(b)** to draw contour diagrams for as either a **PLATE**, **BOWL** or **NEITHER**. A PLATE is any flat surface and a BOWL is anything that could hold water, considering the positive x-axis as "up" and that gravity acts in the "down" direction. **EXPLAIN YOUR ANSWERS.**