

Quiz 4

Multivariable Calculus

Name: _____

Date: _____

Friday February 17

Time Begun: _____

Ron Buckmire

Time Ended: _____

Topic : Partial Derivatives

The idea behind this quiz is to provide you with an opportunity to illustrate your facility with partial differentiation.

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/212/06
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 February 20**, 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. Show that the function $z = f(x, y) = xe^y + ye^x$ is a solution of the equation

$$\frac{\partial^3 z}{\partial x^3} + \frac{\partial^3 z}{\partial y^3} = x \frac{\partial^3 z}{\partial x \partial y^2} + y \frac{\partial^3 z}{\partial x^2 \partial y}.$$

2. The quantity Q , of beef purchased at a store in kilograms per week, is a function of both the price of beef b and the price of chicken c , in dollars per kilogram.

(a) Do you expect $\frac{\partial Q}{\partial b}$ to be positive or negative? **EXPLAIN YOUR ANSWER.**

(b) Do you expect $\frac{\partial Q}{\partial c}$ to be positive or negative? **EXPLAIN YOUR ANSWER.**

(c) Interpret the statement $\frac{\partial Q}{\partial b} = -213$ in terms of the quantity of beef purchased.