

GER Guided Reflections on Student Learning from MA 121 (Dr. John Griggs)

I. GER Objectives:

Mathematics Objectives: Each course in the mathematical sciences category of the General Education Requirements will provide instruction and guidance that help students to:

- 1.) improve and refine the mathematical problem-solving abilities of students;
and
 - a.) the final examination contained questions that called upon the students' abilities to find the derivative (definition of derivative, power rule, product rule, quotient rule, and chain rule) and to use the derivative (graphically and by solving optimization problems).
 - b.) the final examination contained questions that called upon the students' abilities to find the integral (general antiderivative techniques and substitution methods) and to apply the integral (finding areas and volumes using integrals as accumulation models).
- 2.) develop the logical reasoning skills of students.
 - a.) by correctly answering word problems about the derivative, students will reason logically from the finding of the derivative, to the graphical meaning of the derivative, to the solving of the equation(s) resulting from the translated words
 - b.) by correctly answering word problems about the integral, students will reason logically from integrating to solving a problem using the accumulation models

II. Summary of the Evaluation for Each Outcome

- 1.) students were able to successfully find derivatives using the various techniques; students were able to successfully graph functions using the derivatives; however, many students had difficulty solving word problems (optimization problems) because they are not always easy to translate from the written English sentences into mathematical sentences (equations).
- 2.) students were able to successfully use a variety of integration techniques; students were able to successfully find volumes and areas using integrals as accumulation models.

III. Generalizations about the Effectiveness of the Course

This process was a good one because it forced me to distill the entire course and the overall purpose of the course into just a few basic objectives and subsequent outcomes. By doing so, it allowed me to be a better teacher by being constantly more aware of these objectives. This constantly reminded

me to make logically connections of each topic to the purpose of the course, thus making the course easier to organize and easier to learn for the students.

IV. Future Changes Based on this Assessment

I think I will continue to make better, more logical connections of each day's material to the overall course having been through this process. The course content is fine as it is and should not be changed. It is a good summary of the basic tenets of Calculus without getting too involved in the theory behind the concepts.