I. For Calculus II honors I have identified two possible topics for investigation involving numerical methods. I will complete a project in one or both of these areas as time allows. The topics chosen represent alternative approaches to curriculum covered in class and therefore are an extension of my Calculus II coursework. Descriptions of each project follow:

1. Topic one covers the analysis of numerical root finding methods. I will be analyzing accuracy vs. iterations for two or more numerical methods such as: Newton’s method, the Bisection method, the False Position method, or Secant method.

2. Topic two covers the analysis of numerical integration methods for definite integrals. I will be analyzing two or more numerical methods such as: mid-point rule, trapezoid rule, or Simpson’s rule.

II. Each project will include the following components:

* Learn the steps and theory of the method.
* Develop a program to implement the method.
* Verify the program by solving problems with known solutions.
* Apply the method to application problems.
* Create a report detailing components of the project.
* Give an oral presentation of one of the projects.

The reports and oral presentation will include the following:

* An introduction to the problem and numerical method used.
  + A brief summary of the results.
* An explanation of the method’s theory, how the method works, and the required equations.
* A computer/calculator implementation of the method.
* Solutions to known problems.
* Solutions to application problems.
* A project summary.

III. Evaluation criteria for Calculus II honors project consists of two parts:

* Project reports will be worth 75%.
  + The reports will be evaluated on: format, content, grammar, timeliness, and accuracy of mathematical operations.
* Oral presentation will be worth 25%.
  + The presentation will be evaluated on: organization, presentation, timeliness, and accuracy of mathematical operations.