MATH 248 FALL 2017 – LABORATORY ASSIGNMENT 2 – Sochacki
DUE: Tuesday October 10, 2017
POINTS: 50

You are to write up the following neatly on 8.5 x 11 inch paper.

1. Show that $f(x) = x^2 + e^{2x} - \cos(x)$ has only two fixed points. (12 points)

2. Set up Newton's Method to find the fifth root of any positive real number a. If the initial guess is a, what are the next four iterates? (12 points)

3. Write a Matlab script that will determine the real root of $y = x^5 - x^4 + x^3 - x^2 + x - 1$ using the bisection method and Newton's method. Give a written analysis that shows there is a real root and an error estimate for determining the root using each method. (10 points)

4. Write a Matlab script that will determine the fixed point of $f(x) = \cos(x)$ using the fixed point method and Newton's method. Give a written analysis that shows there is a real root and an error estimate for determining the root using each method. (10 points)

Your matlab codes should have variable names that are descriptive. Your coding should be top down and efficient. Make sure the number of calculations is minimized. Your input and output should be well labeled with easy to read instructions. Your turn in should be neat and professional. (6 points)