# MA386 - Introduction to Numerical Analysis
# Homework Assignment 1, 100 points[1]
# Due In Class September 4

1. Section 1.1: 9.
2. Section 1.2: 17.
3. Section 2.1: 14 (remember, first use the Theorem to *estimate* an upper bound on the number of iterations, *then* use the bisection method to see how many iterations it actually takes.).
4. The function $f(x) = \cos(2\pi(x-1)^4)$ has a root on the interval $[0, 1]$, yet when I try to locate a root using the algorithm on page 47 with $a = 0$ and $b = 1$, I *never* get the correct answer. What am I doing wrong? Alter the algorithm to avoid situations like this.
5. Section 1.3: 7 b, 7 c. Check your work by plotting $\log(h)$ vs. $\log(\text{error})$ for $h = 2^{-n}$, $n = 0, 1, \ldots, 10$. Remember, in this case the power of $h$ in the rate should match the slope of the line.
6. Section 1.3: 9.

[1] This number is somewhat artificial; all homework/quiz grades will be averaged into the 500 instructor points at the end of the semester.