# Homework 4

## Due Midnight November 23, 2011

Create a script file that performs calls the appropriate .m files for the following problems. Publish the report as an html file. Zip all the .m files, figures and html file together and upload zip file to the dropbox in D2L.

1. Use the composite trapezoidal rule for n=1:1:10 to approximate $\pi$:

$$\pi = \int_{-1}^{1} \frac{2}{1 + x^2} dx$$

   Calculate the error for each n.  It might be helpful to use the following as a start to displaying the error:

   fprintf('True pi \t Approx pi  \t Error \n')
   for n=1:10
     I=….;
     error = … ;
     fprintf('%6.4f \t \t %6.4f \t %6.4f \n', pi, I, error)
   end

2. Use the quad function for tolerances from 10^(-1):10^(-1):10^(-6) to approximate $\pi$:

$$\pi = \int_{-1}^{1} \frac{2}{1 + x^2} dx$$

   Calculate the error for each tolerance.  It might be helpful to use the following as a start to displaying the error:

   fprintf('True pi \t Approx pi  \t Error \n')
   for i=1:6
     tol = 10^(-i);
     I=….;
     error = … ;
     fprintf('%6.4f \t \t %6.4f \t %6.4f \n', pi, I, error)
   end

3. Number 18.5 (c) in *Applied Numerical Methods with Matlab* by Chapra.

4. Number 18.8 (b) in *Applied Numerical Methods with Matlab* by Chapra.