ESCI7205 hw8

**Due Tu., Oct. 25, 2011.**

Intro to Matlab (short to get back on Tuesday due-day schedule).

1) Intro to round off errors.

Write a Matlab program to estimate the value of pi using the algorithm



a) First show that the two ways to calculate  are mathematically equivalent (i.e. show they are equal). This is a mathematics, not a computer, exercise.

b) Calculate the first 24 iterations using both forms of the iteration equation. This calculation cannot be vectorized, so you can (have to) use loops. Discuss the accuracy of the estimation of  calculated using each form as a function of the iteration. Make a plot that displays the difference. (Should this plot be linear or semi-log?)

c) Discuss what is happening to the approximations?

d) Next calculate the 25th and 26th iterations. Discuss what happens here.