Monte Carlo Simulation Code outline

Overarching goal: Calculate approximate values of PI using Monte Carlo simulations of different lengths (currently max is 1 million) and compare results (averaged over 10 runs).

Run is defined as 1 completion of a code cycle.

Trial is defined as a complete set of runs at a set length

Specific goals:

* Code should have adjustable limit on runs.
* Code should be able to allow me to export trial data into an Excel worksheet
* Calculate individual run and trial percent difference to actual value of PI
* Would be nice if I could queue up an entire trial all at once
* Mark points inside circle as red, circle itself blue, points outside black to make it more obvious
  + If it can automatically save the image, that would be helpful

Plan:

* To calculate a value of Pi after a complete run, divide number of points inside circle (NON-INCLUSIVE) by total number of points.
  + Should take averages of all runs for the value of Pi over an entire trial
* Take summary statistics of ONLY the values of pi
  + Ex. Std. Deviation, Mean, Max, Min, Quartiles, Median etc.
* Use Mathplot and Numpy Python libraries to achieve this task.
* Use 64 Bit python for better performance with the absurd length of the simulations