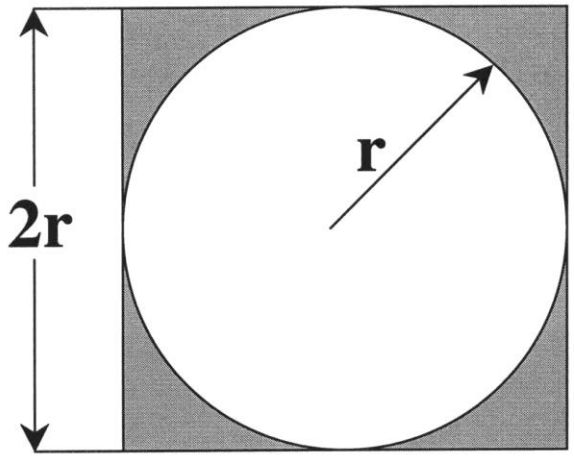
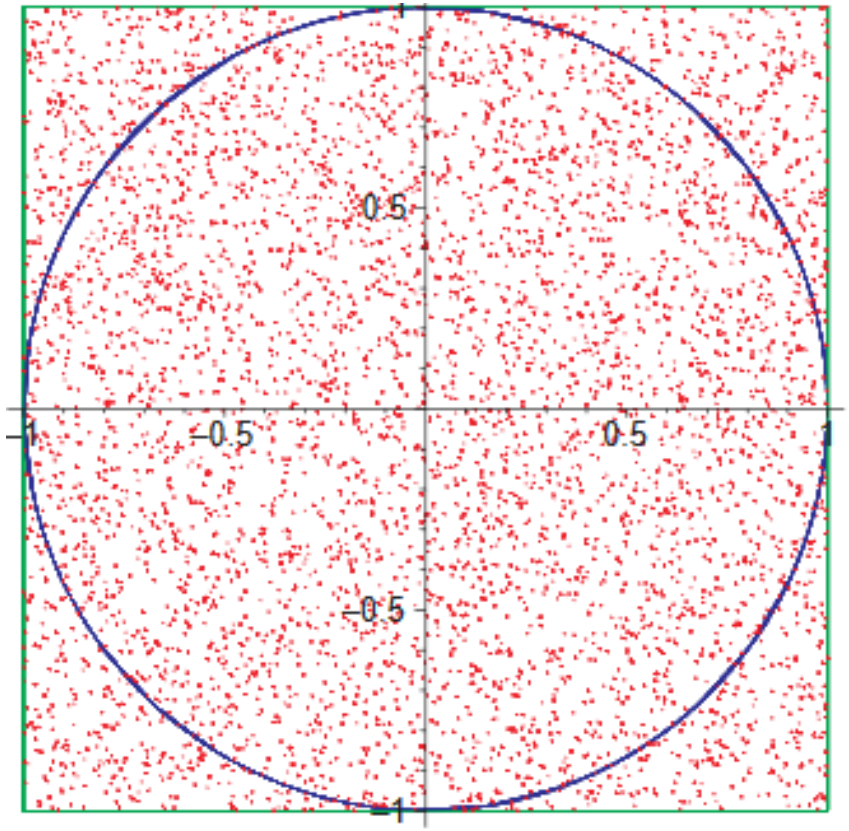
BLG102E
LAB SESSION SIXTH WEEK

(1) Estimating π Value By Monte Carlo Method



Area of Square = $4r^2$
Area of Circle = πr^2
Ratio of area of Circle to area of Square = $\pi r^2/4r^2$
= $\pi/4$

Total number of throws = N
No. hits inside circle = M
Ratio of no. hits inside circle to total no. throws = M/N
$\pi/4 \approx M/N \Rightarrow \pi \approx 4 * M/N$



- Unit circle fits inside square with edge length 2
- Ratio of random points **inside the unit circle** over random points **inside the square** can be used to estimate the value of π

http://ramshome.tripod.com/technical/MonteCarlo/MonteCarlo.html

http://www.science.smith.edu/dftwiki/images/b/b9/MonteCarloBookChapter.pdf

(1) Estimating π Value By Monte Carlo Method

- Write a C program that uses following funtions to estimate the value of π using Monte Carlo Method

  - double getRandomNumber(double lower_limit, double upper_limit)
    Returns a pseudo random real number between the **lower_limit** and **upper_limit**

  - double calculatePi(int max_iteration)
    Returns estimated value of π using **max_iteration** random points