Data Analysis and Interpretation
Assignment Solution 1

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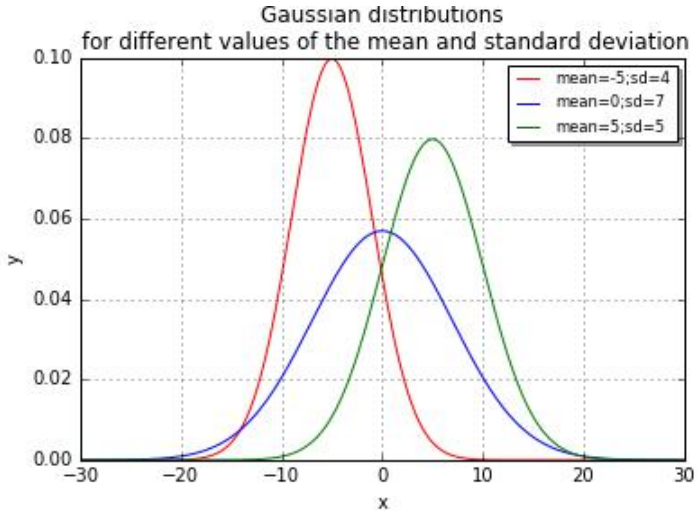
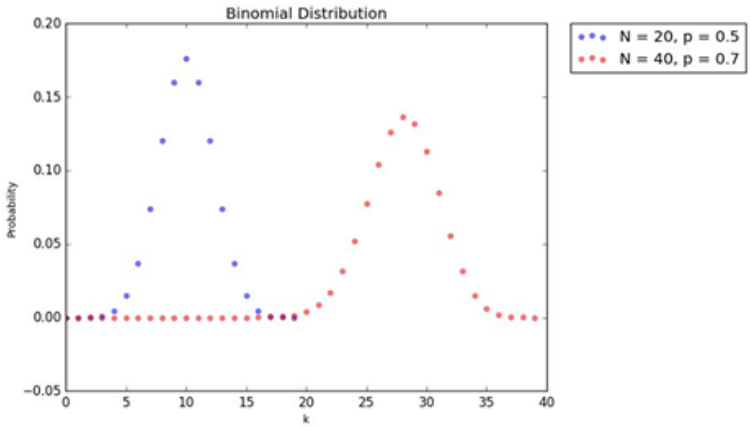
1. Question 1

To plot a Gaussian distribution, Poisson distribution, Binomial distribution and to see what happens as the parameters are varied.

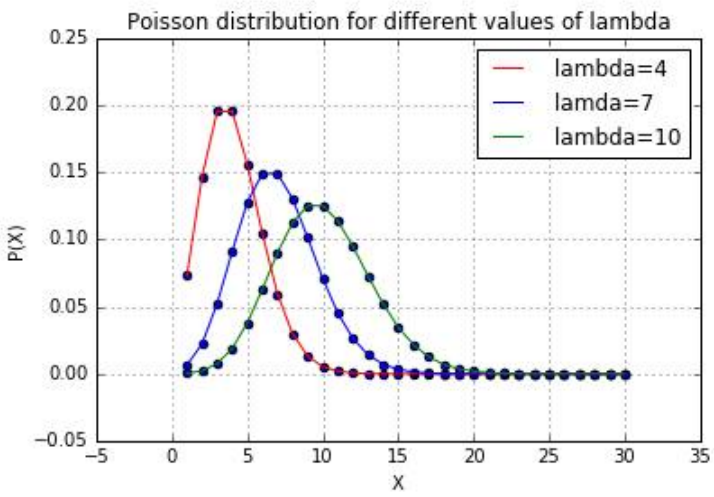
1.1 Plots of Gaussian Distribution Function



1.2 Plots of Binomial Distribution



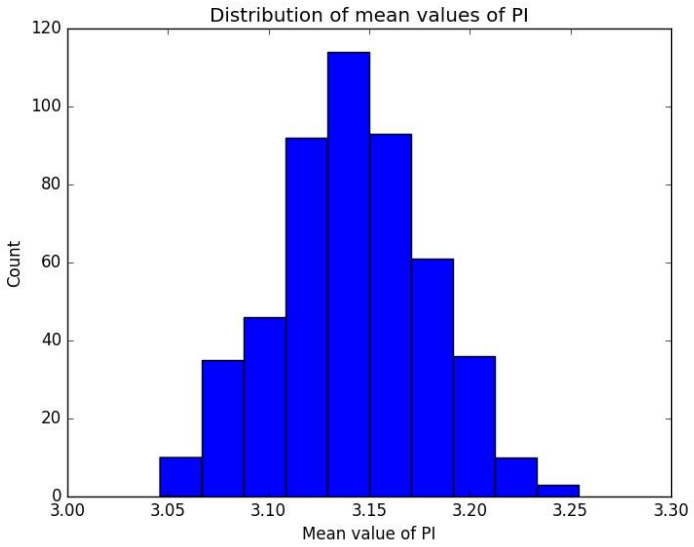
1.3 Plots of Poisson Distribution



2. Question 2

1. To write a program that can generate 2000 randomly distributed random numbers in a square and by seeing how many of these lie inside a circle.
2. To use this to estimate the value of pi a find the error on the estimate.
3. To repeat the above experiment 500 times and plot the distribution of mean values of pi obtained.

2.1 Plot of distribution of pi



3. Summary

For the week 19.09.16 to 28.09.16, we were assigned the task of familiarising ourselves with the basics of python and LaTeX. For this task we made various plots of the Gaussian, Binomial, and Poisson distributions.
The second part of the assignment was an introduction to Monte-Carlo methods, where we attempted to estimate value of pi through computer simulations.

4. Roles for this week 1

The work distribution for the week was as follows:
1. Team Leader: Amey Gaikwad
2. Programmers: Amey Gaikwad, Guru Vamsi, Rahul Dandwate
3. Report Compilation and Website setup: Sumukh Vaidya