

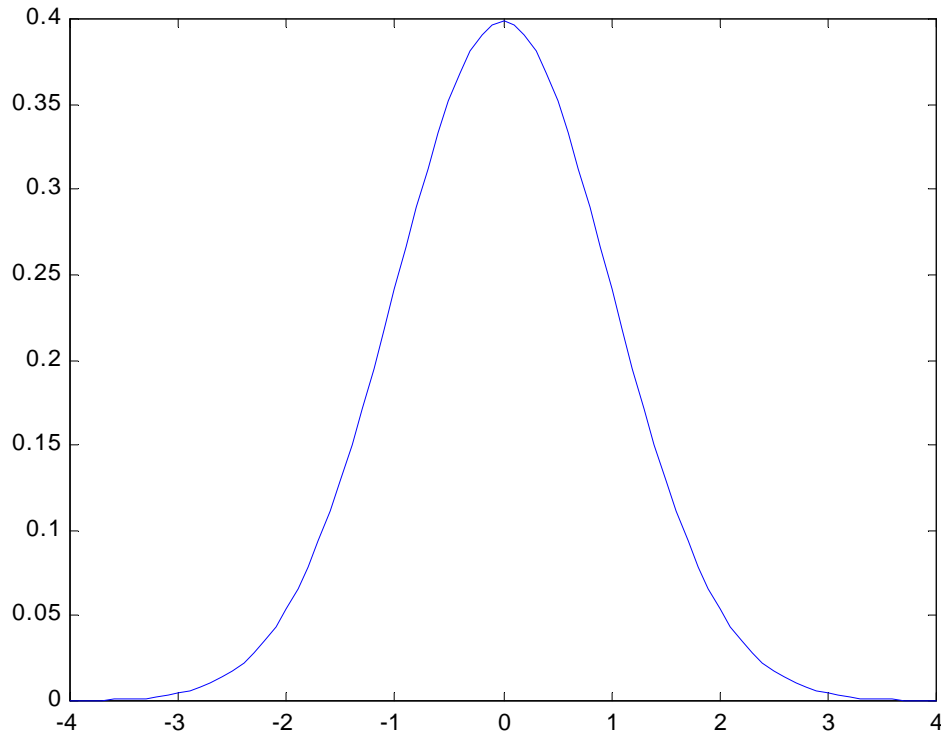
CS-470
Modeling and Simulation
Lab 1
Random Numbers

Date: Week #1 Lab – Tuesday, March 5th, 2002

Due: Week #2 Lab – Tuesday, March 12th, 2002

The assignment is to write functions to generate pseudo-random numbers that follow the well-know distributions: Uniform, Normal, and Exponential. The idea is that a user can call each of these functions to get a random number from one of these distributions. Obviously, if enough random numbers are plotted from each distribution, the general shape of the distribution should be apparent. Test your distribution functions by calling and plotting samples to verify their output. The distributions are as follows:

Standard Normal Distribution

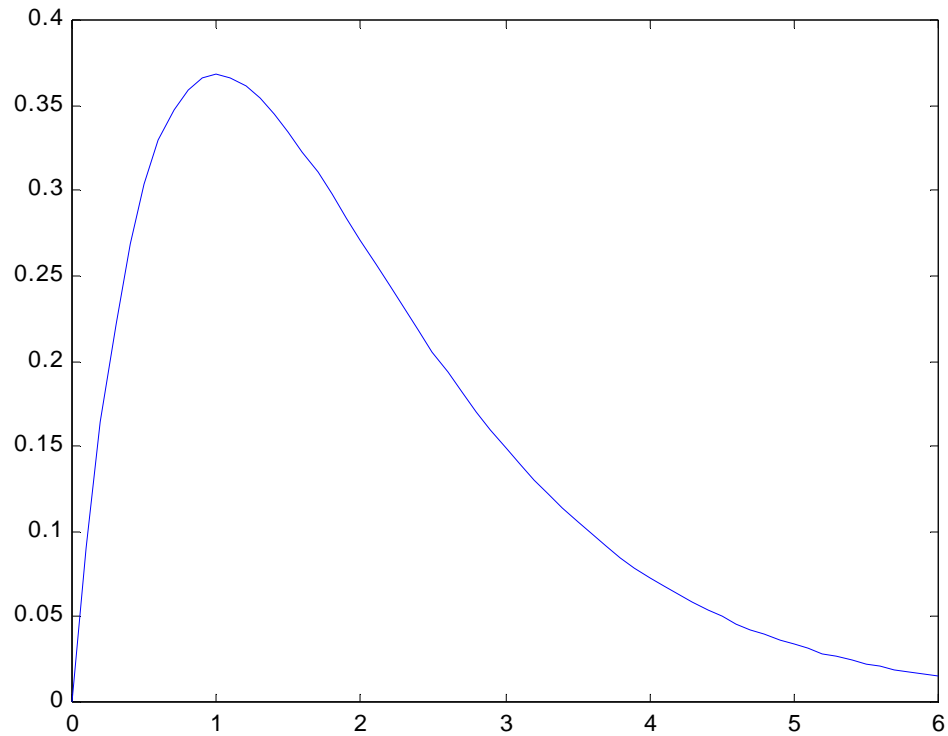


$$f(x) = \frac{1}{\sqrt{2\pi} \cdot \sigma} \cdot e^{-\frac{1}{2} \left(\frac{x-\mu}{\sigma} \right)^2}$$

where μ is the mean

and σ is the standard deviation

A Function that is Exponentially Distributed



$$g(x) = x \cdot e^{-x}$$

A uniform distribution should plot a horizontal line across the selected domain of values.

Make sure your lab report summarizes the approach you've taken to the problem, describes the implementation to adequate detail, and validates your results to test compliance with the stated objectives. Be sure to check my home page for the report format information.