In the name of God

Department of Physics
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COMPUTATIONAL PHYSICS

Exercise Set 4

(Date Due: 1396/12/22)

1. Using Box muller method, generate Gaussian random data. Check the pdf of generated data sets.

2. According to Von-Neumann method, generate a set of random data set in the range $x \in [1-5]$ with PDF as: $p(x) = \sin(x^2/100) + \frac{1}{\cos(x^3/100)} + x^{-3}$.

3. Using the input file, write a proper program to do following tasks. Remember that you have split previous data into 100 part.

A : Compute $C(i,j) = \langle x(t_i)x(t_j)\rangle$. To this end you must do the averaging on 100 data sets. Make a matrix and plot it as a density plot.
B : Compute $C_i(\tau) = \langle x(t+\tau)x(t)\rangle$ for series and plot it for 5 sets of you data.

Good luck, Movahed