

In the name of God

Department of Physics
Shahid Beheshti University

COMPUTATIONAL PHYSICS

Exercise Set 3

(Date Due: 1396/12/12)

1. Fitting formula: Using file which is called *fitinput.txt* and consider $y_{theory} = ax^H$ compute a , H and their errors.
2. Compute the PDF of Random generator of computer. Compare it with a Gaussian function.
3. Using data "*data.txt*", compute the PDF of these data sets using Top-Hat kernel for $\Delta x = 0.1$, $\Delta x = 0.01$ and $\Delta x = 0.001$ and plot them.
4. Using data "*marks.txt*", compute the PDF of these data sets using Gaussian window function for $\sigma = 2$, $\Delta x = 0.2$ and plot them.
5. Using data "*marks.txt*", compute the PDF of these data sets using Top-Hat kernel for $\Delta x = 0.1$. Then based on smoothing approach, consider $\mathcal{B}(X) = e^{-X^2/2\sigma}$ with $\sigma = 2$, $\sigma = 0.2$ in order to smooth PDF. Explain you results.

Good luck, Movahed
