

In the name of God

Department of Physics
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NUMERICAL ANALYSIS COURSE

Exercise Set 5

(Due Date: 1403/08/20)

1. Using Stone throwing method, compute the value of pi (π). Check your algorithm for various values of sampling, N . Hint:

$$\pi = 4 \frac{n}{N}$$

here n is the number of stones satisfying our condition and N is the total number of stones thrown.

2. von Neuman algorithm to generate random data with arbitrary PDF: Using this method do:

A: Suppose that the PDF reads as: $p(x) = \frac{e^{-\frac{x^2}{2}}}{\sqrt{2\pi}}$ for $x \in [-5, +5]$

B: For $p(x) = \sin(x^2/100) + \frac{1}{\cos(x^3/100)} + x^{-3}$ and $x \in [1, 5]$.

The size of your generated data be $N = 10000$.

Good luck, Movahed
