406.311 Simulation
Fall 2007

Homework 3
Due: Thursday, October 25, 2007

Textbook Exercise
4-6, 4-8, 4-15, 4-17

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Homework 4
Due: Thursday, November 15, 2007

Problem 1
Using a spreadsheet, use $n = 100$ to verify (mean, standard deviation, range, ...)

(a) Normal $(\mu = 12, \sigma = 2)$

(b) Gamma $(E(X) = 12, \sqrt{Var(X)} = 1)$

(c) Lognormal $(E(X) = 1, \sqrt{Var(X)} = 0.1)$

Problem 2
For exponential with $E(X) = 6$, estimate α_3 and α_4 for $n = 10, 100, 1000$. Plot a few realizations. ($\alpha_4 - \alpha_3^2$ Graph).

Problem 3
Obtain a data set of size > 100 from a method of your choice.

(a) Compute $\bar{x}$, s, $\hat{\alpha_3}$, and $\hat{\alpha_4}$.

(b) Discuss the physical properties, (*e.g.* range, discrete/continuous, shape, summary statistics, etc.)

(c) Hypothesize a family of distribution.

(d) Fit parameters.

(e) Plot data *vs* fitted distribution.

Problem 4
Repeat **Problem 3** using ARENA's Input Analyzer and discuss the result.

Problem 5
Derive the followings:

(a) MLE for exp(β) distribution.

(b) CV (coefficient of variation) for Lognormal distribution.

(c) MOM for Gamma distribution.

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Homework 5
Due: Tuesday, December 4, 2007

Textbook Exercise
5-11, 5-12

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Homework 6
Due: Tuesday, December 18, 2007

Textbook Exercise
6-5, 7-8, 7-9