1016-345-01
Probability and Statistics for Engineers

Problem Set 5

Assigned 2012 October 9
Due 2012 October 16

Show your work on all problems! If you use a computer to assist with numerical computations, turn in your source code as well.

1 Devore Chapter 1, Problem 20

2 Devore Chapter 1, Problem 42

3 Devore Chapter 1, Problem 44

4 Devore Chapter 1, Problem 78

5 Computational Exercise (Extra Credit)

This is designed to give you some practice in dealing with larger data sets using a numerical computation environment such as scipy, matlab, mathematica, minitab, etc. Download the data for this problem from
`http://ccrg.rit.edu/~whelan/courses/2012_3fa_1016_345/data/ps05_prob5.dat`
using the credentials given in class.

a. Calculate the sample median $\widetilde{x}$
b. Calculate the sample mean $\overline{x}$.
c. Calculate the sample variance deviation directly as $s^2 = \frac{\sum(x_i - \overline{x})^2}{n-1}$.
d. Calculate the sample variance using the shortcut formula $s^2 = \frac{1}{n-1}\left[\sum x_i^2 - \frac{1}{n}(\sum x_i)^2\right]$.
e. Plot a histogram of the data, with bin boundaries at multiples of 10.