

# 1016-351-01

## Probability

### Problem Set 1

Assigned 2011 September 6  
Due 2011 September 13

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/2011\\_3fa\\_1016\\_351/data/ps01\\_prob5.dat](http://ccrg.rit.edu/~whelan/courses/2011_3fa_1016_351/data/ps01_prob5.dat)

using the credentials given in class.

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