

# MATH 252-01: Probability and Statistics II

## Problem Set 5

Assigned 2018 February 20  
Due 2018 February 27

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 9, Problem 2

*Note that problem 9.2 is (slightly) different in the eighth and ninth editions of Devore. Be sure to do the problem from the ninth edition.*

### 2 Devore Chapter 9, Problem 28

*Note that problem 9.28 is (slightly) different in the eighth and ninth editions of Devore. Be sure to do the problem from the ninth edition.*

### 3 Devore Chapter 9, Problem 34

### 4 Computational Exercise

Download the following data sets:

[http://ccrg.rit.edu/~whelan/courses/2018\\_1sp\\_MATH\\_252/data/ps05\\_prob4\\_set1.dat](http://ccrg.rit.edu/~whelan/courses/2018_1sp_MATH_252/data/ps05_prob4_set1.dat)

[http://ccrg.rit.edu/~whelan/courses/2018\\_1sp\\_MATH\\_252/data/ps05\\_prob4\\_set2.dat](http://ccrg.rit.edu/~whelan/courses/2018_1sp_MATH_252/data/ps05_prob4_set2.dat)  
using the username and password given in class.

Under each of the following assumptions, find a 95% confidence interval for the difference of the means  $\mu_1 - \mu_2$ , and determine the  $P$  value for the null hypothesis  $H_0: \mu_1 = \mu_2$  in light of the alternative hypothesis  $\mu_1 \neq \mu_2$ :

- a. Assume the two samples are drawn from normal distributions with unknown means  $\mu_1, \mu_2$  and standard deviations  $\sigma_1, \sigma_2$ .
- b. Assume the two samples are drawn from normal distributions with unknown  $\mu_1, \mu_2$  and the same standard deviation  $\sigma_1 = \sigma_2$ .
- c. Assume the two samples are drawn from normal distributions with unknown  $\mu_1, \mu_2$  and the known standard deviations  $\sigma_1 = 4.7$  and  $\sigma_2 = 5.1$ .