

# MATH 252-01: Probability and Statistics II

## Problem Set 6

Assigned 2019 February 28  
Due 2019 March 7

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 40**
- 2 Devore Chapter 9, Problem 50**
- 3 Devore Chapter 9, Problem 52**
- 4 Computational Exercise**

Download the following data sets:

[http://ccrg.rit.edu/~whelan/courses/2019\\_1sp\\_MATH\\_252/data/ps06\\_prob4\\_set1.dat](http://ccrg.rit.edu/~whelan/courses/2019_1sp_MATH_252/data/ps06_prob4_set1.dat)

[http://ccrg.rit.edu/~whelan/courses/2019\\_1sp\\_MATH\\_252/data/ps06\\_prob4\\_set2.dat](http://ccrg.rit.edu/~whelan/courses/2019_1sp_MATH_252/data/ps06_prob4_set2.dat)  
using the username and password given in class.

Assuming that these represent paired data drawn a bivariate normal distribution with means  $\mu_1$  and  $\mu_2$ , variances  $\sigma_1^2$  and  $\sigma_2^2$  and correlation coefficient  $\rho$ , all unknown, 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  $H_a: \mu_1 \neq \mu_2$ .