MATH 252-01: Probability and Statistics II

Problem Set 6

Assigned 2016 October 4
Due 2016 October 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 9, Problem 2

2   Devore Chapter 9, Problem 28

3   Devore Chapter 9, Problem 34

4   Computational Exercise

Download the following data sets:
http://ccrg.rit.edu/~whelan/courses/2016_3fa_MATH_252/data/ps06_prob4_set1.dat
http://ccrg.rit.edu/~whelan/courses/2016_3fa_MATH_252/data/ps06_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 μ_1, μ_2 and standard deviations σ_1, σ_2.
   b. Assume the two samples are drawn from normal distributions with unknown μ_1, μ_2 and the same standard deviation $\sigma_1 = \sigma_2$.
   c. Assume the two samples are drawn from normal distributions with unknown μ_1, μ_2 and the known standard deviations $\sigma_1 = 4.7$ and $\sigma_2 = 5.1$.