

MATH 252-01: Probability and Statistics II

Problem Set 8

Assigned 2016 October 25

Due 2016 November 1

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 12, Problem 4

2 Devore Chapter 12, Problem 12

3 Devore Chapter 12, Problem 38

Note that Problem 19 had $n = 14$, $\sum_{i=1}^n x_i = 3300$, $\sum_{i=1}^n y_i = 5010$, $\sum_{i=1}^n x_i^2 = 913750$, $\sum_{i=1}^n y_i^2 = 2207100$, and $\sum_{i=1}^n x_i y_i = 1413500$. Note also that “a useful relationship” means a linear model with non-zero slope.

4 Computational Exercise

Download the following data sets:

http://ccrg.rit.edu/~whelan/courses/2016_3fa_MATH_252/data/ps08_prob4_set1.dat

http://ccrg.rit.edu/~whelan/courses/2016_3fa_MATH_252/data/ps08_prob4_set2.dat

using the username and password given in class.

Perform a linear regression on this pair of data sets using statistical software, and obtain

- The estimates $\hat{\beta}_0$, $\hat{\beta}_1$, and $\hat{\sigma}^2$.
- The coefficient of determination r^2 .
- A 90% confidence interval for the slope β_1 .

5 Devore Chapter 12, Problem 40 (extra credit)