

STAT 205 Homework 6 (Due: Wednesday, November 29, 2017)

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Total Points: 55

1. (30 points) Exercise 12.3.7 in page 536. Finish (a), (b), (c), (d), and (e) Construct a 95% confidence interval for β_1
(f) Find the multiple R-squared, and interpret it in the context of the problem. (30)
2. (25 points) A researcher is interested in how variables, such as GRE (Graduate Record Exam scores) and GPA (grade point average) effect admission into graduate school. The response variable, admit (1) / don't admit (0), is a binary variable. You can input the data to R using the following code:

```
data <- read.table("http://people.stat.sc.edu/sshen/courses/17sstat205/data/edudata.txt",  
sep="\t")  
admit <- data$admit  
gre <- data$gre  
admit  
gre
```

- (a) Fit a logistic regression model with admit as response and gre as explanatory variable. Show both R output and the formula of model.
- (b) Test whether gre is significant. (Hint: use the p-value in the R output.)
- (c) What is the function do we use to estimate the probability of a student being admitted with his/her GRE score?
- (d) If some student's GRE score is 700, what is the probability this student will be admitted?
- (e) Calculate the odds ratio of gre, and interpret it in the context of the problem.