Homework #4

1. (5 points) Two gene mutations, say A and B, are suspected of causing high cholesterol levels in human. Suppose that a random sample of 400,000 people was selected. The cholesterol levels on these people were used to test the null hypothesis H_{0A} (or H_{0B}) that people with A (or B) mutations have cholesterol level *not* higher than normal people. If H_{0A} is rejected with a p-value of 0.011 and H_{0B} is rejected with a p-value of 0.009, which mutation is the true cause of high cholesterol level?

2. (5 points each) Exercises 10.8.2, 10.8.4, 10.8.13
3. (10 points) Exercises 10.8.10
4. (15 points) Exercises 10.8.14
5. (10 points) Exercises 10.8.16 (by R. Notice that the first column "trtment" is NOT used in this question. You read it into R when input the whole data set, but it is not used in later analysis here. These are one-sample questions. The "trtment" is only used in question in chapter 11.)
6. (15 points) Exercise 11.4.13.

Following is the demo mentioned in the class, which you can run to have a better understanding of the meaning of confidence intervals. (This example is not related to this homework).

```
library(TeachingDemos)
ci.examp(mean.sim =60, sd = 5, n = 15, reps = 100, method = "z",
lower.conf=0.025, upper.conf=0.975)
```