1. Do Problem B.2 in Wooldridge (pg. 729).

2. Do Problem C.6 in Wooldridge (pgs. 772-773).

3. Do Problem C.7 in Wooldridge (pgs. 773-774).

4. A random sample of 25 observations from a normal population with mean $\mu$ and variance 16 is given. Suppose you are interested in the following hypothesis: $H_0 : \mu = 10$ versus $H_1 : \mu = 12$. Find the Type I and Type II error probabilities for the following decision rules:
   
   (a) Reject $H_0$ when $\bar{X} > 10.5$.
   
   (b) Reject $H_0$ when $\bar{X} > 11.5$.

5. Scores on a standardized test have a normal distribution with a variance of 100. It has recently been claimed that the variance of scores has increased. Given a sample of 30 scores with $s^2 = 110$ (where $s^2$ denotes the sample variance), test the hypothesis at a 5% significance level:

$$H_0 : \sigma^2 = 100$$

$$H_1 : \sigma^2 > 100$$