

SIMON FRASER UNIVERSITY  
Department of Economics

Econ 435  
Quantitative Methods in Economics

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Fall 2002

PROBLEM SET 3 - Statistics Review  
(Due October 4)

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:

$$\begin{aligned}H_0 : \sigma^2 &= 100 \\H_1 : \sigma^2 &> 100\end{aligned}$$