ASSIGNMENT 3

Due date: 10:30am, Wednesday, 25 October, 2006

1. Exercise 6.2.4 on page 167 (read the instruction just before 6.2.1 on page 166).
2. Exercise 6.3.2 on pages 171–172.
3. Exercise 6.4.4 on page 180 (read the instruction just before 6.4.1 on the same page).
4. Exercise 6.5.2 on page 183 (read the instruction just before 6.5.1 on the same page).
5. Exercise 6.6.2 on page 185 (read the instruction just before 6.6.1 on the same page).
10. In a study of maximal aerobic capacity, 12 women were used as subjects, and one measurement that was made was blood plasma volume. The following data give their blood plasma volumes in liters:

\[
3.15 \ 2.99 \ 2.77 \ 3.12 \ 2.45 \ 3.85 \\
2.99 \ 3.87 \ 4.06 \ 2.94 \ 3.53 \ 3.20
\]

Assume that these are observations of a normally distributed random variable \( X \) that has mean \( \mu \) and standard derivation \( \sigma \). (a) Give the value of a point estimate \( \mu \). (b) Determine a point estimate of \( \sigma \). (c) Find a 90 \%, 95 \%, and 99 \% confidence interval of \( \mu \).

11. An experimenter tested for differences in attitudes toward smoking before and after a film on lung cancer was shown. He found a difference which was significant at both the 0.05 and the 0.02 significance levels. Can you tell whether the difference was significant at the 0.1 and 0.01 significance levels?

12. A certain brand of cigarettes is advertised by the manufacturer as having a mean nicotine of 15 milligrams per cigarette. A sample of 200 cigarettes is tested by an independent research laboratory and found to have an average of 16.2 milligrams of nicotine content and a standard deviation of 3.6 milligrams. Using the 0.01 significance level, can we conclude based on this sample that the actual mean nicotine content of this brand of cigarettes is

(a) greater than 15 milligrams?
(b) not equal to 15 milligrams?