

SM 316 – Spring 2019

Homework 7

Due: Wednesday 27 MAR 2019

PLEASE READ THE INSTRUCTIONS/SUGGESTIONS ON THE COURSE WEBPAGE.

Hand in the following problems:

1. Do the following problems from the textbook: 8.37, 8.39, 8.41, 8.45, 8.48, 9.2, 9.3, 9.11
2. A random sample of 100 automobile owners in the state of Virginia shows that an automobile is driven on average 23,500 kilometers per year with a standard deviation of 3900 kilometers. Assume the distribution of measurements to be approximately normal.
 - (a) Construct a 99% confidence interval for the average number of kilometers an automobile is driven annually in Virginia.
 - (b) What can we assert with 99% confidence about the possible size of our error if we estimate the average number of kilometers driven by car owners in Virginia to be 23,500 kilometers per year?
3. A machine produces metal pieces that are cylindrical in shape. A sample of these pieces is taken and the diameters are found to be 1.01, 0.97, 1.03, 1.04, 0.99, 0.98, 0.99, 1.01, and 1.03 centimeters.
 - (a) Find the sample mean and sample variance.
 - (b) If the true standard deviation is $\sigma = 0.025$, use the Chi-squared distribution and the sample standard deviation to support or contest σ .
 - (c) Using $\sigma = 0.025$, find a 99% confidence interval on the mean diameter.
 - (d) Using the sample standard deviation, find a 99% confidence interval on the mean diameter.