Topic 0
Revision

1.   A sample of 50 college students showed mean height of 167.16 cm and standard deviation of 6.86 cm.
      (a)   Estimate the mean height of all college students.
      (b)   Construct a 95% confidence interval for the mean height of all college students.

2.   A machine is producing metal pieces that are cylindrical in shape. A sample of pieces is taken and the diameters are 1.01, 0.97, 1.03, 1.04, 0.99, 0.98, 0.99, 1.01 and 1.03 inches. Find a 99% confidence interval for the mean diameter of all pieces from this machine, assuming a normal distribution.

3.   The manufacturer of a certain brand of car batteries claims that the mean life of these batteries is 45 months. A consumer protection agency that wants to check this claim took a random sample of 36 such batteries and found that the mean life for this sample is 43.15 months. The lives of all such batteries have a normal distribution with standard deviation of 6.1 months.
      (a)   Test the hypothesis that the mean life of these batteries is less than 45 months at the 2.5% significance level.
      (b)   What is the Type I error in this case? Explain. What is the probability of making this error in part (i)?
      (c)   What is the Type II error in this case? Explain.