Assignment 8

1. Using the "*X*" data in the spreadsheet "Assignment 8.xls"
    a. Compute the 95% confidence interval for a small sample assuming that *X* is distributed normally with an unknown mean and variance.
    b. Compute the 95% confidence interval for a large sample assuming that *X* is distributed normally with an unknown mean and variance (hint, use the concentrated normal likelihood function).
    c. In each case, test the hypothesis that the mean is equal to 5.3.
2. Using the "*Y*" data in the spreadsheet "Assignment 8.xls"
    a. Compute the 95% confidence level using the central limit theorem and test the hypothesis that the mean is equal to 5.3.
    b. Given that the distribution is a Gamma distribution, construct a maximum likelihood estimate of α and β. Construct a 95% confidence interval for each parameter.
    c. Test the hypothesis that the mean of the Gamma distribution is equal to 5.3 (i.e., impose the restriction that $\alpha\beta = 5.3$ this will give you a restricted likelihood function).