Math 026L.04 Spring 2002
Lab Report for Normal Data Sets

Contributors: _____

Part I: Data Gathering

1. Describe your data, how it was obtained, and what your source was. How many measurements did you make?

2. What is the mean and the standard deviation of your data?

$$\overline{x} = \text{_____} \text{ and } s = \text{_____}$$

3. (First Test for Normality) Use your calculator to draw a histogram for your data and sketch the results below. Experiment with different x scale values before drawing your graph.

4. (Second Test for Normality)

(a) What percentage of your data lies in the interval $[\overline{x} - s, \overline{x} + s]$? _____

(b) What percentage of your data lies in the interval $[\overline{x} - 2s, \overline{x} + 2s]$? _____

Show your calculations here.

Part II: Analyzing the Data

1. Organize the values of your cumulative distribution function in a table and write the results below.

2. Sketch a graph of your cumulative distribution function. Carefully label your axes.

3. Use symmetric difference quotients to approximate the density function for your data. Organzie the values of your density function in a table and write the results below. Show at least one sample calculation used to construct your density function.

Part III: The Mean and Standard Deviation of Discrete Data

1. (Third Test for Normality) Use your calculator to graph the density function (as individual points) you constructed along with the theoretical density function

$$p(x) = \frac{1}{s\sqrt{2\pi}} \, e^{-\frac{1}{2}\left(\frac{x-\bar{x}}{s}\right)^2}.$$

Sketch your results below.

2. Do you think your data was normally distributed? Justify your conclusion. Comment on any unusual or inconsistent parts of your data.