MATH 4513 : HOMEWORK 7

1. Write a Maple program that finds the optimal set of $n + 1$ nodes on a specified interval $[a, b]$. (Write it in such a way that it takes the numbers n, a, and b as input parameters.)

2. Write a Maple program that finds the Newton form of the interpolation polynomial of degree n corresponding to a set consisting of $n + 1$ data points. (Write in such a way that it takes the number n and two arrays x[i] and y[i] as input parameters.)

3. Write a Maple program that converts the Newton form of an interpolation polynomial to a polynomial in standard form:

$$P(x) = a_n x^n + a_{n-1} x^{n-1} + \cdots + a_1 x + a_0$$

4. In this last problem you are to use the tools you've developed above to find a polynomial that best fits a set of experimental data. Go to

    http://www.math.okstate.edu/~binegar/4513-F98/Interpolation_Problem.html

There you will find a program that takes as input a set of nodes x_i and produces, as output, a corresponding table of *experimental data*. Pick an appropriate choice of nodes, determine the corresponding experimental data, and find a polynomial (in standard form) that best fits your data.