

## NUMERICAL ANALYSIS PROGRAMS IN MATHEMATICA

### About the Program Disk

This README file gives instructions to the Mathematica programs on the disk. These programs are designed to run on a minimally configured computer. Minimal hard disk space plus the Mathematica package are all that is really needed. All of the programs are given as ASCII files with the .MA file extension. They can be altered using any editor or word processor that creates a standard ASCII file. These are commonly called a "Text Only" file.

Within Mathematica, open the file as a notebook. It will be imported as a single "cell" which is inactive. Select the cell by clicking at the top right of the code where the brace is located. Then go to the cell on the menu and select "active" by clicking on the toggle labeled "inactive". The one cell program is now executable. To execute the program, place the cursor inside the text and press the INSERT key or SHIFT-ENTER.

Some of the programs require the input of large amounts of data or generate extensive output. To enable the programs to be run quickly and efficiently, the input data can be placed in data files and the data files read by the program. When the output is likely to be extensive, the programs have been constructed so that it is convenient to place the output directly into an output file. The program will prompt you for the form of the input or output you would like to use. For example, when running the program for Neville's method, ALGO31.MA, using the defined data file ALGO31.DTA for the sample problem, you will first see a screen that states:

```
Choice of input method:
1.  Input entry by entry from the keyboard
2.  Input data from a text file
3.  Generate data using a function F
Choose 1,2, or 3 please
```

If you choose 1 you will need to enter all the data for the program from the keyboard, and any mistake in a data entry will require the program to be rerun. Choosing 2 will lead to the input data file ALG031.DTA. Choosing 3 will cause the program to prompt you for the input of the function F.