Software Review
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SOFTWARE REVIEW

MATHEMATICA, VERSION 2.0, FOR MICROSOFT WINDOWS 3.0. Wolfram
Research Inc., 100 Trade Center Drive, Champaign, IL 61820, $995.

Mathematica is a software package for doing numeric, symbolic and graphical
computations and data manipulation. There are versions currently available for almost
20 different computer platforms. Mathematica is designed for the high end of the
scientific community; it is a full-scale development environment with a built-in, fully
featured programming language as well as an easy-to-use Windows interface.
Imbedded in Mathematica is a powerful programming language which supports over
800 different mathematical functions.

The program is divided into two major parts. A kernel, which does the
computations, and a front-end interface. The kernel is essentially the same for all
hardware platforms while the front end varies, depending upon the graphical
capabilities of the host computer. With machines that support Graphical User
Interfaces a notebook format is used, with which the user can interactively program and
perform mathematical computations. Within a notebook, in the Windows version,
graphics, sound, formulas and animation can be combined. Mathematica's graphics
capabilities are excellent. It can be used to generate attractive graphs, including
contour and three-dimensional plots. It also includes proficient features for
manipulating text. One of Mathematica's strong points is that it provides the ability to
save documents in the Postscript format, allowing them to be ported to many different
platforms.

Because of its powerful programming language and portability, Mathematica has
gained a substantial user base. There are a large number of software additions called
packages, which are basically Mathematica programs, written to perform specific tasks.
The Windows version comes with packages to do linear algebra, transform analysis,
statistics, geometry and numerous others.

Installation and setup are flawless. The intuitive, interactive installation program
is fully automated and alerts the user to possible problems, such as a lack of available
hard disk space. The front-end program is menu driven and well organized. With only
the pull-down menus and the short, well written user's manual, you can start doing
simple calculations immediately. More complex calculations, though, require a
commitment on the part of the user to work through Stephen Wolfram's textbook
"Mathematica." The serious user should be prepared to spend a considerable amount
of time to master the complex programming language.

Before installing Mathematica, you need to make sure your computer meets the minimum requirements set forth by Wolfram Research. You need a 386- or 386sx-based PC with Windows 3.0 running in enhanced mode, at least 9 megabytes of free hard drive space, a minimum of 4 megabytes of RAM, and a math co-processor. I found, while using the program, that the 4 megabytes of RAM in my system was the absolute minimum the program requires and that 8 megabytes would be a more conservative figure. With only 4 megabytes of RAM, I found that Mathematica sometimes crashed unexpectedly with "out of memory" errors and left me at the DOS prompt.

The technical support at Wolfram is excellent. On the occasions where I had questions or problems with the program, I was forwarded to knowledgeable and courteous support personnel within one or two minutes. The addition of E-mail support through Internet is a feature that I wish more software publishers would implement.

The documentation shipped with the program is well written and easily understood by the uninitiated user. There is more than enough documentation to allow individual users to pick and choose from the documentation to answer any questions they may have. Stephen Wolfram's textbook "Mathematica," which is shipped with the package, is excellent and has plenty of detail to enable the user to explore the finer points of the programming language.

Mathematica is a powerful and elegant package and should be more than capable of handling just about any numeric or symbolic problem you're liable to ask of it. It should, though, be emphasized that the minimum hardware configuration recommended by Wolfram Research is a little sparse for serious work. I would recommend at least 8 megabytes of RAM, or more, and a fast 386 or 486 CPU.

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