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COMPUTER SOFTWARE
REVIEWS

CalculationCenter 1.0. Wolfram Research, Inc., 100 Trade Center Dr., Champaign, IL 61820-7237. http://www.wolfram.com. Suggested Retail Price: $295.00.

CalculationCenter is a new "mid-market" mathematical calculation and graphing program for use on both Windows and Macintosh platforms from the makers of Mathematica. The program runs under Windows 95, 98, Me, NT, or 2000 or Mac OS 7.5.3 or later. The minimum requirements are a 486 processor with 85 MB disk space, 32 MB RAM, and CD-ROM drive. A Pentium III 1GHz PC with 256MB of RAM running Windows 98 was used for this evaluation.

The software package comes with a concise paperback guide entitled "Getting Started" and a software-based slide show designed to quickly educate new users on basic program operation and proper mathematical notation. For those uninitiated in the realm of mathematical calculation programs, the "Getting Started" guide included with the software is essential, albeit minimal, reading. This guide quickly introduces some important items of syntax and provides some examples of calculations and functions that are possible with this software. The work area is set up in a notebook-like style that easily allows the user to integrate text, graphics, and typeset equations into one document. This also permits the user to create platform-independent reports that can be saved in html or text format. Interactive menu-based tools referred to as "Controllers" enable the user to quickly enter formulas, constants, characters, and units and provide easy and rapid calculation and plotting of functions. A "Style Controller" also allows the user to format text and customize notebook layout effortlessly.

CalculationCenter's interface is very user-friendly and incorporates graphics-based "Instant Calculators" that simplify the entry of functions and expressions and automatically prompt the user for parameter input. Like Mathematica, CalculationCenter can perform numeric and symbolic calculations, calculate integrals, manipulate matrices, factor polynomials, and analyze data imported from externally generated text or graphics files. Keyboard shortcuts are also included that shorten the time required for nontrivial entry of user-defined mathematical expressions. One benefit of the Instant Calculators is that the user can convert the graphics-based expressions into a text-based input format. This alone is a great learning tool and allows users to become adept much more quickly than if they were required to access help files first and then copy input in the correct syntax to their notebooks.

In addition to performing symbolic and numerical calculations, CalculationCenter is also a powerful tool for graphical applications. Incorporated into the program are "SmartPlot" features that allow the user to create two-dimensional graphs, pie charts, bar charts, contour plots, density plots, and three-dimensional surface plots quickly. Plots and data can be easily exported in a variety of formats (e.g., jpeg, eps, gif, table, and list). Similar to Mathematica, this program can also animate the graphical plot function to better visualize how a defined function is controlled with respect to a given variable.

CalculationCenter's Help browser features a built-in search engine to find specific mathematical functions and provides succinct explanations and examples of program operation and protocol. The software also contains an "intelligent input correction" aid that displays error messages and suggests alternatives to incorrectly entered input. This can be very useful when entering large formulas, or for those that are less-than-nimble typists. One shortcoming of this feature is that this automatic correction aid is unable to recognize successive (or sequential) identical errors that have already been "corrected". The user must be cautious not to make the same mistake twice in the same session of CalculationCenter. The first time a user makes a mistake it correctly prompts the user to correct the error. However, if the mistake is repeated a second time it treats it as a constant. To correct this, the program must be quit entirely and the program restarted before it will once again recognize a previously identified mistake.

The authors claim, "If you want to get going in 10 minutes, get CalculationCenter. If you don't ever want to find your product's limits, get Mathematica." Even though we were unfamiliar with Mathematica or any other mathematical calculation software, it was easy enough to get going in a few minutes, but after 25−30 min, we quickly recognized a few of CalculationCenter's limitations. Attempts to use some of the more advanced features, such as solving multiple simultaneous equations and importing data or graphics files, were met with difficulty. For instance, even though we were able to import a tab delimited text file easily, we had difficulty manipulating the array and plotting the data correctly. Additional referencing of the Help files included with the software and on Wolfram's Web site provided no additional insight or benefit. As a possible solution, "The Mathematica Book" by Stephen Wolfram was referenced in an attempt to clarify syntax or offer suggestions to overcome these problems. However, we soon discovered that the entry of Mathematica's syntax and mathematical expressions was not compatible with CalculationCenter. Consultation with Wolfram's Web site indicated that users wishing to perform advanced calculations and data manipulation should upgrade to Mathematica. This syntax incompatibility between programs and the lack of direct software upgrade represent clear weaknesses for those users who wish to expand the functionality of CalculationCenter. Regardless, a common syntax format with Mathematica would have a definite benefit, because a user wishing to upgrade to Mathematica would not have to relearn program syntax and mathematical notation.

Overall, CalculationCenter provides an effective means of introducing new users to the area of software-based mathematical calculations and allows an easy and quick start for performing numeric and symbolic calculations and for plotting mathematical functions; however, given the limits inherent in this midlevel package, a potential buyer must truly evaluate their

specific needs. As a teaching tool, this program has tremendous value, especially for use in high school and undergraduate courses. As a research tool, for even moderate data analysis and graphical applications, this program is very inadequate as a result of the lack of supporting documentation and limited functionality. This is especially true for students wishing to buy mathematical calculation software, because they can purchase a student version of Mathematica, MathCAD or Maple for less than $150. Purchasing CalculationCenter would then be a poor use of funds, because it displays limited capabilities for nearly double the purchase price. However, given that full versions of the aforementioned alternative programs range from $1000−1500 for nonacademic customers, it is suggested that buyers carefully consider their application and needs and decide whether the advanced features and expandability are more vital than the quick start and ease-of-use features offered with CalculationCenter.

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