

Mathcad 15.0 Upgrade Feature Comparison Chart

| MATH FORMATS & DISPLAY | | | | VEI | RSION | | | | |
|--|---|------|------|---------------|-------|----|----|------|------|
| | 8 | 2000 | 2001 | 2001 <i>i</i> | 11 | 12 | 13 | 14.0 | 15.0 |
| SI, MKS, U.S. and CGS unit-balancing with user- defined units | * | * | * | * | * | * | * | * | * |
| Temperature and non-multiplicative scaling units (dB, FIF, DMS, etc.) | | | | | | | * | * | * |
| User-defined default units dialog showing base and derived units | | | | | | | * | * | * |
| Real, imaginary and complex number support | * | * | * | * | * | * | * | * | * |
| Decimal, binary, octal and hexadecimal display and import | * | * | * | * | * | * | * | * | * |
| Explicit substitution of values before calculation | | | | | | | * | * | * |
| In-line statement definition and evaluation | | | | | | | | * | * |
| Math operator display options for assignment, partial derivatives and multiplication | | * | * | * | * | * | * | * | * |
| Operator display options for symbolic evaluations | | | | | | | * | * | * |
| Engineering and Scientific Notation Display | | * | * | * | * | * | * | * | * |

| BUILT-IN FUNCTIONS | 8 | 2000 | 2001 | 2001 <i>i</i> | 11 | 12 | 13 | 14.0 | 15.0 |
|---|---|------|------|---------------|----|----|----|------|------|
| 80+ core mathematical functions and 10 discrete transform functions | * | * | * | * | * | * | * | * | * |
| Advanced linear algebra functions based on BLAS/LAPACK libraries | | | | | | | * | * | * |
| 110+ statistics, probability and data analysis functions | * | * | * | * | * | * | * | * | * |
| 18 differential equation and partial differential equation solvers | * | * | * | * | * | * | * | * | * |
| Root-finding functions | * | * | * | * | * | * | * | * | * |
| 47 matrix creation, lookup, and characteristics functions | * | * | * | * | * | * | * | * | * |
| 28 file access functions | * | * | * | * | * | * | * | * | * |
| 14 expression-type and string functions | * | * | * | * | * | * | * | * | * |
| 18 finance functions | | * | * | * | * | * | * | * | * |
| Complex arguments for Bessel/Hankel and truncation functions | | | | | * | * | * | * | * |
| Enhanced data fitting functions | | | | | * | * | * | * | * |
| New data fitting algorithm and automatic derivatives | | | | | | | * | * | * |
| 1D and 2D Correlation | | | | | | * | * | * | * |
| Logarithmically-spaced point generators | | | | | | * | * | * | * |
| Until function for iteration | * | | | | | * | * | * | * |
| Jacob function | | | | | | | | * | * |
| 30 Design of Experiments functions | | | | | | | | | * |

| BUILT-IN OPERATORS | 8 | 2000 | 2001 | 2001 <i>i</i> | 11 | 12 | 13 | 14.0 | 15.0 |
|---|---|------|------|---------------|----|----|----|------|------|
| 35+ arithmetic, vector and matrix operators | * | * | * | * | * | * | * | * | * |
| 1st and n th derivative, definite and indefinite integration, and limits | * | * | * | * | * | * | * | * | * |
| 9 evaluation operators | * | * | * | * | * | * | * | * | * |
| 10 boolean operators | | * | * | * | * | * | * | * | * |
| User-defined operators | | * | * | * | * | * | * | * | * |
| Programming operators (loops, assignments, etc.) | * | * | * | * | * | * | * | * | * |
| Namespace operator | | | | | | * | * | * | * |
| Del operator (gradients) | | | | | | | | * | * |

| SOLVING CAPABILITIES | 8 | 2000 | 2001 | 2001 <i>i</i> | 11 | 12 | 13 | 14.0 | 15.0 |
|---|---|------|------|---------------|----|----|----|------|------|
| Define and evaluate variables and functions numerically or symbolically | * | * | * | * | * | * | * | * | * |
| Linear and non-linear system solving and optimization solve blocks | * | * | * | * | * | * | * | * | * |
| Solve systems with hundreds of variables and constraints, in matrix or individual equation notation | | * | * | * | * | * | * | * | * |
| Fast ODE solver for stiff systems and differential algebraic systems (Radau) | | | | * | * | * | * | * | * |
| Systems of ODEs in solve blocks | | | * | * | * | * | * | * | * |
| New and improved ODE algorithms (Adams, BDF) | | | | | | | | * | * |
| Statespace function | | | | | | | | * | * |
| 1D PDE solvers in solve blocks | | | | | * | * | * | * | * |
| Live symbolic (algebraic) evaluation, including expansion, factorization, transforms | * | * | * | * | * | * | * | * | * |
| New and enhanced symbolics capabilities, including vectorization, solve fully, piecewise integral solutions, new and enhanced keywords, etc. | | | | | | | | * | * |
| Multiple root-finding algorithms, including symbolic methods | | * | * | * | * | * | * | * | * |
| Local functions in programs | | | | | | * | * | * | * |

| APPLICATION CUSTOMIZATION & EXTENSIBILITY | 8 | 2000 | 2001 | 2001 <i>i</i> | 11 | 12 | 13 | 14.0 | 15.0 |
|--|---|------|------|---------------|----|----|----|------|------|
| User-defined functions created in C, C++ or FORTRAN | * | * | * | * | * | * | * | * | * |
| Embed or link any OLE-compliant application or ActiveX control | * | * | * | * | * | * | * | * | * |
| Use OLE Automation & Visual Basic [®] to call Mathcad | * | * | * | * | * | * | * | * | * |
| Software Development Kit (SDK) for building custom components | | | * | * | * | * | * | * | * |
| Mathcad Custom Controls | | | * | * | * | * | * | * | * |
| Scriptable object component for reuse and deployment of components | | | * | * | * | * | * | * | * |
| Automation interface for scripting Mathcad worksheets | | | | * | * | * | * | * | * |
| Mathcad Automation access from internal scriptable objects | | | | | * | * | * | * | * |
| Automation access to XML Metadata and region content | | | | | | * | * | * | * |
| Web controls (scriptless, save state) | | | | | | * | * | * | * |
| Previous version compatibility switches | | | | | | | * | * | * |

| GRAPHING &VISUALIZATION | 8 | 2000 | 2001 | 2001 <i>i</i> | 11 | 12 | 13 | 14.0 | 15.0 |
|---|---|------|------|---------------|----|----|----|------|------|
| Bar charts, x-y, polar, vector, contour, scatter, and surface plots | * | * | * | * | * | * | * | * | * |
| Animation capabilities | * | * | * | * | * | * | * | * | * |
| Trace & Zoom | * | * | * | * | * | * | * | * | * |
| 2D and 3D QuickPlot™ and plot annotation | | * | * | * | * | * | * | * | * |
| Open GL™ 3-D graphs | * | * | * | * | * | * | * | * | * |
| Image Viewer with support for BMP, GIF, JPG, PCX, TARGA, PGM, TIFF | | | * | * | * | * | * | * | * |
| 2nd Y-axis for 2D plots | | | | | | * | * | * | * |
| Positionable legends for 2D plots | | | | | | * | * | * | * |
| Grid and marker color selectors | | | | | | * | * | * | * |
| Full color palette for traces, new symbols, symbol frequency | | | | | | | * | * | * |
| Axis number formatting | | | - | | | | | * | * |
| Negative radii on polar plots | | | | | | | | * | * |
| Box plots | | | | | | | | | * |
| Effects plots | | | | | | | | | * |
| Pareto plots | | | | | | | | | * |
| FILE FORMATS, PUBLISHING & WEB SUPPORT | 8 | 2000 | 2001 | 2001 <i>i</i> | 11 | 12 | 13 | 14.0 | 15.0 |
| Save as XML | | | | | | * | * | * | * |
| Compressed images and files | | | | | | * | * | * | * |
| Calculated results saved in XML | | | | | | * | * | * | * |
| Save as HTML | * | * | * | * | * | * | * | * | * |
| HTTP File Open support | | | | | * | * | * | * | * |
| Save files in older file formats | | | * | * | * | * | * | * | * |
| Save to RTF, retaining region positioning for MS Word | | | | | * | * | * | * | * |

| DOCUMENT/TEXT EDITING FEATURES | 8 | 2000 | 2001 | 2001 <i>i</i> | 11 | 12 | 13 | 14.0 | 15.0 |
|---|---|------|------|---------------|----|----|----|------|------|
| Customizable spell checker with technical terms | * | * | * | * | * | * | * | * | * |
| Document templates and style sheets | * | * | * | * | * | * | * | * | * |
| Hyperlinking | * | * | * | * | * | * | * | * | * |
| Advanced Find and Replace in text and math | * | * | * | * | * | * | * | * | * |
| Region layering, bordering and alignment controls | | * | * | * | * | * | * | * | * |
| Document ruler with indenting support | | * | * | * | * | * | * | * | * |
| Text and equation highlighting, bordering and color selection | | * | * | * | * | * | * | * | * |
| Header and footer formatting | | * | * | * | * | * | * | * | * |
| Hidden, collapsed, and locked areas | | * | * | * | * | * | * | * | * |
| Live math within text regions | | * | * | * | * | * | * | * | * |
| Indexing and hyperlink-checking for e-books | | | * | * | * | * | * | * | * |
| Document protection | | | | * | * | * | * | * | * |
| Region nudging and alignment guides | | | | | * | * | * | * | * |
| Metadata, automatic provenance, annotations | | | | | | * | * | * | * |
| Autofilled delete lines | | | | | | * | * | * | * |
| Custom characters toolbar | | | | | | | * | * | * |
| Longarea names, change referenced files in Properties | | | | | | | * | * | * |
| Full Unicode support | | | | | | | | * | * |
| Comprehensive math font | | | | | | | | * | * |

| USABILITY FEATURES | 8 | 2000 | 2001 | 2001 <i>i</i> | 11 | 12 | 13 | 14.0 | 15.0 |
|---|---|------|------|---------------|----|----|----|------|------|
| Automatic unit tracking and conversion | * | * | * | * | * | * | * | * | * |
| Automatic recalculation | * | * | * | * | * | * | * | * | * |
| Autosave | | | | | | | * | * | * |
| Program debugging | | | | | | | * | * | * |
| Visual comparison of worksheets | | | | | | | | * | * |
| Customizable toolbars and interface | * | * | * | * | * | * | * | * | * |
| Easy-to-use equation editor | * | * | * | * | * | * | * | * | * |
| Error Tracing | | | | | * | * | * | * | * |
| Unit-specific error messages | | | | | | | * | * | * |
| Function dialog box with functions arranged in categories | | * | * | * | * | * | * | * | * |
| Algorithm AutoSelect for integration, optimization, and ODE solve blocks | | * | * | * | * | * | * | * | * |
| Multi-region property settings | | | | * | * | * | * | * | * |
| Multi-region Undo | | | | | * | * | * | * | * |
| Redefinition warnings | | | | | * | * | * | * | * |
| Mathcad User's Guide on Start menu | | | | | * | * | * | * | * |
| Available in English, French, German, Japanese | * | * | * | * | * | * | * | * | * |
| Available in Italian, Spanish, Korean, Chinese (Simplified, Traditional) | | | | | | | | * | * |

| CONNECTIVITY WITH OTHER APPLICATIONS | 8 | 2000 | 2001 | 2001 <i>i</i> | 11 | 12 | 13 | 14.0 | 15.0 |
|---|---|------|------|---------------|----|----|----|------|------|
| Support for Microsoft SharePoint Server | | | | | * | * | * | * | * |
| Pro/ENGINEER [®] Integration | | | | | | | * | * | * |
| MathWorks MATLAB® 4 - 6.5 | * | * | * | * | * | * | * | * | * |
| Autodesk [®] AutoCAD 2000/2001i/2002 | | * | * | * | * | | | | |
| Microsoft [®] Excel | | * | * | * | * | * | * | * | * |
| Intergraph [®] SmartSketch 4 | | | | * | * | * | * | * | * |
| Support for Windchill 9.1 | | | | | | | | * | * |
| Support for Windchill ProductPoint | | | | | | | | * | * |
| Knovel Math | | | | | | | | | * |
| Kornucopia software | | | | | | | | | * |
| Truenumber | | | | | | | | | * |

| DATA EXCHANGE FEATURES | 8 | 2000 | 2001 | 2001 <i>i</i> | 11 | 12 | 13 | 14.0 | 15.0 |
|--|---|------|------|---------------|----|----|----|------|------|
| Data filters for .mat files, Excel files, Lotus 1-2- 3, ASCII & others | * | * | * | * | * | * | * | * | * |
| Mixed format import, cut and paste (strings, complex, engineering notation, real numbers, Excel) to matrices | | | | | * | * | * | * | * |
| Real-time data acquisition from National Instruments [®] and Measurement Computing analog boards | | | * | * | * | * | * | * | * |
| Microsoft [®] Access, FoxPro and SQL-supported databases | | | * | * | * | * | * | * | * |
| WAV file read, write and information functions | | | * | * | * | * | * | * | * |
| File I/O component for multiple file formats, importing data as strings, and selecting specified columns or rows | | | | | * | * | * | * | * |
| Support for UserEFI strings | | | | | * | * | * | * | * |
| Improved APPENDPRN function | | | | | * | * | * | * | * |
| Binary file read and write | | | | | * | * | * | * | * |
| Enhanced Excel data exchange and integration | | | | | * | * | * | * | * |
| Data Wizard component with preview, text, binary and Excel import settings | | | | | | * | * | * | * |
| Function to read Excel and fixed-width files | | | | | | * | * | * | * |
| READEXCEL and WRITEEXCEL supporting Excel 2007 file format | | | | | | | | | * |
| READCSV and WRITECSV using csv format | | | | | | | | | * |

| RESOURCES | 8 | 2000 | 2001 | 2001 <i>i</i> | 11 | 12 | 13 | 14.0 | 15.0 |
|---|---|------|------|---------------|----|----|----|------|------|
| References tables, key formulas and constants | * | * | * | * | * | * | * | * | * |
| PlanetPTC Community - Mathcad Web-based forum | * | * | * | * | * | * | * | * | * |
| Technical support | * | * | * | * | * | * | * | * | * |
| Online tutorials and discipline-specific examples | * | * | * | * | * | * | * | * | * |
| Easy-to-use online Help with Search and Index | | * | * | * | * | * | * | * | * |
| Adaptable QuickSheets demonstrating standard analyses and tasks | | * | * | * | * | * | * | * | * |
| New Solving and Optimization E-book | | | | | | | | * | * |
| Localized Help and Documentation | | | | | | | | * | * |
| Online Developer's Reference | | | * | * | * | * | * | * | * |
| FLEXIm license management | | | | | | | | * | * |
| Programming tutorial | | | | | | | * | * | * |
| Rewritten, reorganized and reformatted Help | | | | | | * | * | * | * |

| MICROSOFT STANDARDS AND OS SUPPORT | 8 | 2000 | 2001 | 2001 <i>i</i> | 11 | 12 | 13 | 14.0 | 15.0 |
|---|---|------|------|---------------|----|----|----|------|------|
| Microsoft [®] Windows 95 | * | * | * | | | | | | |
| Microsoft® Windows NT 4 (Service Pack 6 or higher) | * | * | * | * | * | | | | |
| Microsoft® Windows 98 (Service Pack 2) | * | * | * | * | * | | | | |
| Microsoft® Windows XP support | | | | * | * | * | * | * | * |
| Microsoft® Windows ME support | | | * | * | * | | | | |
| Microsoft® Office 2000 compatibility | | | * | * | * | * | * | | |
| Microsoft® Office 2003 compatibility | | | | | | | * | * | * |
| Microsoft® Windows XP/Office XP support | | | | * | * | * | * | * | * |
| Microsoft® Windows Vista support | | | | | | | | * | * |
| Microsoft® Windows 7 support | | | | | | | | | * |
| Microsoft® Office 2007 support | | | | | | | | | * |
| ActiveX support | | * | * | * | * | * | * | * | * |

| ADDITIONAL TOOLS AVAILABLE | 8 | 2000 | 2001 | 2001 <i>i</i> | 11 | 12 | 13 | 14.0 | 15.0 |
|---|---|------|------|---------------|----|----|----|------|------|
| Civil, Electrical, and Mechanical Engineering Libraries | * | * | * | * | * | * | * | * | * |
| Knovel Math –comprehensive Roark's and Hicks' reference content | | | | | | | | | * |
| Data Analysis Extension Pack | | | | | * | * | * | * | * |
| Signals, Image Processing, and Wavelets Extension Packs | * | * | * | * | * | * | * | * | * |
| Solving and Optimization Extension Pack | * | * | * | * | * | * | * | | |
| Licensing with maintenance | * | * | * | * | * | * | * | * | * |
| PTC Gold Maintenance Support | * | * | * | * | * | * | * | * | * |
| Mathcad On-site Training Courses | | | | | * | * | * | * | * |
| Web-based Training Courses | | * | * | * | * | * | * | * | * |
| VisSim Plus | | | | | * | * | * | | |