

Software Solutions for Math Education

Because Math Matters



Because Math Matters

Math is so important to our world and to the future success of your students, which is why, as educators, you strive endlessly to help your students understand and work with math. The Maplesoft™ Mathematics Suite is a collection of software solutions that act as your assistant, helping your students understand and succeed, and giving you greater returns on the time and effort you put into teaching.

With enlightening visualizations, instant feedback, motivating examples, self-serve content, hands-on explorations, and much more, the Maplesoft Mathematics Suite helps you:

- **Engage students** who are easily bored or distracted
- **Motivate students** who don't see the point
- Overcome **math anxiety**
- Instill **true understanding** in students who are just going through the motions
- Provide sufficient opportunities for **practice**
- **Evaluate progress** in a world where it's easy to look up answers
- Deal with varying levels of **readiness** for the course material

The image features a young woman with curly hair sitting cross-legged on a white floor, smiling and looking up. She is using a laptop with the word "MATH" on the lid. Surrounding her are various mathematical software interfaces and visualizations, including graphs, equations, and 3D models. The background is a light blue gradient.

Mathematical content visible in the image includes:

- Equation: $\frac{d}{dt}P(t) = \frac{\ln(3)}{7} \cdot P(t) = -3$
- Equation: $P(t) = c \cdot 3^{\frac{t}{7}} + \frac{21}{\ln(3)}$ Solution
- Equation: $\int 1 - 3e^x dx$
- Equation: $(x-6)e^x + C$ Evaluated
- Equation: $x^3 - 7x^2 + 7x + 15 = (x-5)(x-3)(x+1)$
- Equation: $\sin\left(\frac{3}{4}\right) + \cos(5\sqrt{x})$
- Equation: $2x+3=4x+5$
- Equation: $2x=4x+2$
- Equation: $-2x=2$
- Equation: $x=-1$
- Equation: $2x+3=4x+5$ Check: $2x+3=4x+5$
- Equation: $-2x=2$ Check: $2x+3=4x+5$
- Equation: $x=-1$ Solution

Maplesoft™ Mathematics Suite

The Maplesoft Mathematics Suite is a family of math software products that help you help your students succeed in math and subjects that involve math, like engineering, physics, or economics.

This family of products makes it extremely easy to explore, visualize, and solve mathematical problems from high school all the way through to graduate studies. Each one provides access to the world's most powerful mathematics engine through an easy-to-use interface that is designed to meet the needs of students at different phases of their education.



Maple™



Maple Learn™



Maple Flow™

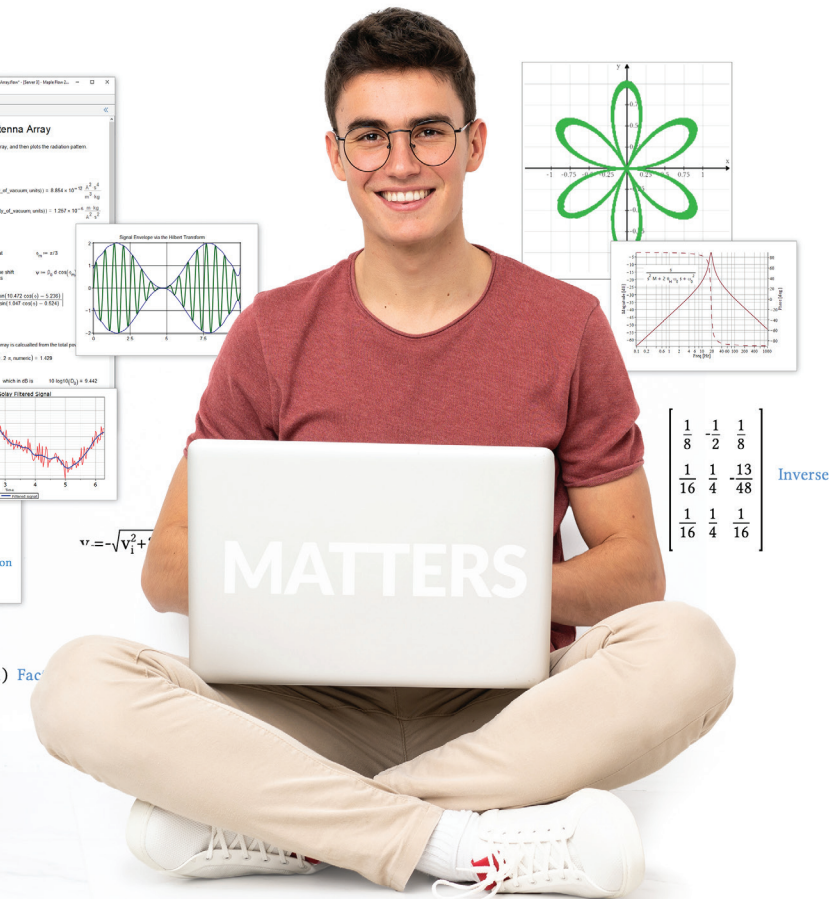


Maple Calculator™

If there's math involved, we have a solution!

The Maplesoft Mathematics Suite helps with courses from high school to grad school, and beyond, including:

- Algebra
- Astronomy
- Biology
- Business
- Calculus
- Chemistry
- Differential Equations
- Economics
- Electrical Engineering
- Functions
- Mechanical Engineering
- Physics
- Ring Theory
- Statistics
- Structural Engineering
- *and more!*



$$\begin{bmatrix} \frac{1}{8} & \frac{1}{2} & \frac{1}{8} \\ \frac{1}{16} & \frac{1}{4} & \frac{13}{48} \\ \frac{1}{16} & \frac{1}{4} & \frac{1}{16} \end{bmatrix} \text{Inverse}$$

Let us help

Consult our experts to determine which product is best for you and your class.

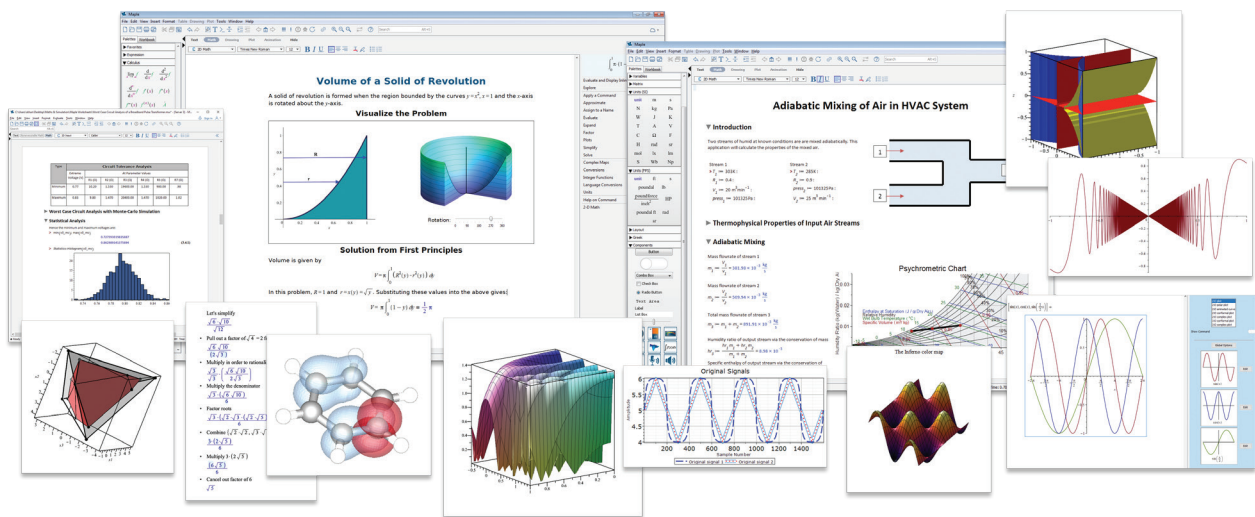
www.maplesoft.com/suite



The Essential Tool for Mathematics

Maple™ is math software that combines the world's most powerful math engine with an interface that makes it extremely easy to analyze, explore, visualize, and solve mathematical problems. With Maple, you aren't forced to choose between mathematical power and usability, making it the ideal tool for both education and research.

Especially good for: Anyone working with advanced math, including educators and students in upper year courses or math-heavy programs, researchers, programmers, technical content creators, or anyone who wants access to everything, just in case they need it later



Extremely Powerful Math Engine

Maple has the depth, breadth, and performance to meet all your mathematical challenges.

- Over 5000 functions covering virtually every area of mathematics, including calculus, algebra, differential equations, statistics, linear algebra, geometry, and much more
- Symbolic, numeric, and hybrid computation algorithms
- World-leading algorithms for solving problems that are beyond the reach of any other software system
- Sophisticated 2-D and 3-D plotting and animations
- Efficient algorithms and tools for high performance computing and large-scale problem solving

Incredibly Easy to Use

Whether you are doing a quick calculation, developing complex algorithms, illustrating a concept, or creating an interactive technical document, Maple makes it easy to get the job done.

- Clickable Math™ interaction for point-and-click problem solving
- Sophisticated programming language designed for mathematics
- Specialized tools specifically for teaching and learning key topics in calculus, algebra, and more
- Rich authoring environment for creating technical documents and applications



Maple Add-ons

Maple Global Optimization Toolbox

Powered by Optimus®

Find the best possible solution to your optimization problems.

Maple Grid Computing Toolbox

Distribute your computations across large-scale compute clusters and supercomputers.

Maple Quantum Chemistry Toolbox from RDMChem

Predict, explore, and design novel molecules in a powerful, easy-to-use environment

Join the Maple Community!

Maple is used by more than 8000 educational institutions, research labs, and companies, in over 90 countries. When you choose Maple, you are immediately supported by:

- Thousands of examples, applications, and Math Apps contributed by Maple users
- An active online community dedicated to sharing experiences, techniques, and opinions
- Teacher and student resource centers, with classroom materials, training videos, tips and techniques, and more

Application areas include:

- Calculus
- Visualization
- Differential Equations
- Control Design
- Financial Modeling
- Transforms
- Code Generation
- Parallel and Grid Computing
- Algebra
- Statistics
- Polynomial Systems
- Physics
- Scientific Data Management
- Units and Tolerances
- Application Development
- Web Deployment
- Matrices and Vectors
- Geometry
- Advanced Mathematics
- Optimization
- Signal Processing
- Curve Fitting
- CAD Connectivity
- ...and much more!



Great for research, too!

Maple helps you keep students engaged, motivated, and learning. But Maple can also help you advance your research with powerful software that can help you understand and solve difficult mathematical problems from virtually any branch of mathematics, easily develop your own algorithms and applications, and solve large-scale problems efficiently.



Teaching and Learning Math Online Just Got Easier

Maple Learn™ is an interactive online environment for exploring mathematical concepts, solving problems, and creating and sharing rich, interactive content.

Especially good for: Math courses in high school, two-year, and technical colleges; first year math courses and math courses for non-math majors in universities; courses that make use of calculations, such as economics, business, and physics

Maple Learn is...

... an open canvas that understands math

A lot of math teaching and learning is done dynamically, as you introduce ideas, answer questions, explore what-if scenarios, and walk students through solutions. Instead of forcing you to switch back and forth from a graphing calculator tool to your regular teaching environment, the Maple Learn canvas gives you a single environment where you can:

- Solve a problem at a click of a button, to get the final answer, verify a result, or perform tedious intermediates steps
- Graph an expression, both 2-D and 3-D plots, and zoom in to explore details
- Pose problems, derive full solutions, write conclusions, perform side calculations, add supporting text, and move items around the canvas
- Control parameters through sliders, and watch results and graphs change instantly

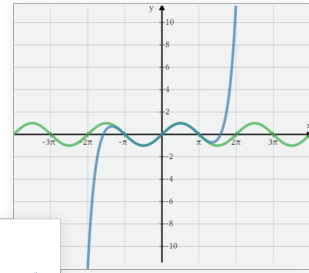
The image shows a woman sitting cross-legged on the floor with a laptop, surrounded by various mathematical plots and equations from the Maple Learn interface. The interface includes:

- A window titled "Slope-Intercept Form of a Line" showing the equation $y = mx + b$ and a graph of a line with a negative slope. It includes sliders for m and b .
- A window titled "Inverse" showing a matrix: $\begin{bmatrix} \frac{1}{8} & \frac{1}{2} & \frac{1}{8} \\ \frac{1}{16} & \frac{1}{4} & \frac{13}{48} \\ \frac{1}{16} & \frac{1}{4} & \frac{1}{16} \end{bmatrix}$.
- A window showing a green flower-like plot.
- A window showing a 3D surface plot.
- A window showing a sine wave plot with the equation $\sin(\pi x) = \sin(\pi x)$.
- A window showing a factored polynomial: $x^3 - 7x^2 + 7x + 15 = (x-3)(x+1)$ Factored.
- A window showing a solution to a system of equations: $2x+3=4x+5$, $2x=4x+2$, $-2x=2$, $x=-1$ Solution.
- A window showing a derivative: $\frac{d}{dt} P(t) = \frac{\ln(3)}{7} P(t)$, $P(t) = c_1 3^{\frac{t}{7}}$ Solution.
- A window showing an integral: $\int \frac{1}{2} x^3 e^x dx = \frac{(x^3 - 3x^2 + 6x - 6)e^x}{2} + C$ Evaluate.
- A window showing a quadratic formula result: $v = \sqrt{v_1^2 + 2a \cdot \Delta d} \Rightarrow v_1 = -42.978 \frac{m}{s}$.

... a powerful math tool

Maple Learn has the Maple math engine behind it, which means it has the mathematical smarts to handle all the math used in math and other courses from high school, two year and technical colleges, and early university. You can use Maple Learn to:

- Calculate formulas
- Solve equations
- Find integrals
- Calculate derivatives
- Invert matrices
- Multiply vectors and matrices
- Row reduce matrices
- Graph expressions
- Factor polynomials
- Simply expressions
- Solve differential equations
- Find medians and means
- Visualize 3-D expressions
- and more!



$$x^3 - 7x^2 + 7x + 15$$

$$(x-5)(x-3)(x+1) \text{ Factored}$$

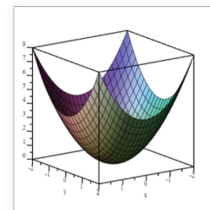
$$\begin{bmatrix} \frac{1}{8} & -\frac{1}{2} & \frac{1}{8} \\ \frac{1}{16} & \frac{1}{4} & -\frac{13}{48} \\ \frac{1}{16} & \frac{1}{4} & \frac{1}{16} \end{bmatrix} \text{ Inverse}$$

$$\frac{d}{dt} P(t) - \frac{\ln(3)}{7} P(t) = -3$$

$$P(t) = c_1 3^{\frac{t}{7}} + \frac{21}{\ln(3)} \text{ Solution}$$

$$\int \frac{1}{2} x^3 e^x dx$$

$$\frac{(x^3 - 3x^2 + 6x - 6)e^x}{2} + C \text{ Evaluated}$$



Slope-Intercept Form of a Line

The equation of a non-vertical line in slope-intercept form is $y = mx + b$ where m is the slope and b is the y-intercept.

Example:
 $y = mx + b \Rightarrow y = -4x + 4$
 Point(0,b)

Use the sliders to see how the equation and subsequent plot change.

$m = -4$
 $b = 4$

Overview

A system is made up of a spring and two masses. Mass 1 is hanging from a string attached over a pulley to mass 2, which is connected to a spring. Mass 2 is displaced a distance of 5m left of its natural equilibrium position and released.

Try adjusting the value of q , the position of mass 2, and see the resulting changes in the energy and speed of the system.

Spring Mass System

Position
 $q = -6.00 \text{ m}$

Equilibrium Position
 $q_0 = 5 \text{ m}$

Spring Constant
 $k = 196.2 \frac{\text{N}}{\text{m}}$

Mass 1
 $m_1 = 10 \text{ kg}$

Mass 2
 $m_2 = 3 \text{ kg}$

... an environment that brings static content to life

Maple Learn brings learning to life, with content that combines:

- The rich presentation of textbook content, combining text, math, graphs, and images
- The guided explorations of interactive learning objects that deepen conceptual understanding
- The open-endedness of a notebook where students try things for themselves

In Maple Learn, you can provide your students with lessons, explorations, examples, worked solutions, practise quizzes, homework, and more.

Whether you want to create your own content, or customize some of the thousands of documents already available covering topics in dozens of subjects, Maple Learn is the easiest way to create rich, interactive math-based content and share it with your class online.



Engage your students in their engineering analyses

Maple Flow™ is a mathematics tool that makes it easy for engineers to brainstorm, develop, and document their design calculations.

- Combines a simple, freeform interface with a comprehensive math engine
- Provides a whiteboard-style environment that automatically keeps calculations live as users refine, reposition, and develop their work

Work on and document your calculations in a freeform interface that feels like you're using paper, and let your calculations flow!

With Maple Flow, engineering educators can:

- **Do calculations, write documentation and easily refine your work** in an environment that does not feel like a programming tool or a spreadsheet.
- **Encourage and reinforce engineering thought processes** in an environment that makes it easy for you and your students to refine your ideas as you develop a solution.
- **Explore what-if scenarios on the fly**, work through examples without risk of calculation errors, and tackle more realistic, engaging problems whose calculations would be too time-consuming to do by hand.
- **Develop live, fully documented class notes** and electronic handouts.
- **Emphasize the importance of units**, with a fully featured units system and built-in units tracking.
- **Provide students with a simple, freeform scratchpad** for doing everything from double-checking a manual calculation to developing fully documented solutions to complex problems.
- **Take advantage of a comprehensive set of built-in application examples**, for learning and as a starting point for new content.
- **Encourage brainstorming and make calculations fun!**

Especially good for: Engineering students and instructors at any level who do design calculations



Maple™ Calculator

Solve problems and explore graphs on your phone

Maple Calculator is a free powerful math solver and versatile math learning tool that gives you answers, 2-D and 3-D graphs, and even step-by-step solutions! Whether you are doing simple calculations or working on university-level math problems, Maple Calculator can do it all.

Especially good for: Students from high school on up, and Maple and Maple Learn users who want to enter problems using their phone's camera



Just click to enter your math

Enter handwritten and typeset math problems at the click of your camera using powerful AI technology, or enter your expression through the editor using standard mathematical notation.

Do all sorts of math

No matter how you enter your problem, you can find integrals, factor polynomials, invert matrices, solve systems of equations, solve ODEs, and much more.

Graph problems and results

See 2-D and 3-D graphs of your expression instantly, and watch how the graph changes as you change the expression. You can zoom in, pan, and even rotate 3-D plots to get a closer look at areas of interest.

A Useful Companion to Maple and Maple Learn!

You can use Maple Calculator to take a picture of your math and upload it to Maple or Maple Learn for further explorations and visualizations. **No more transcription errors!**

Resources

Maplesoft provides a vast array of resources to help you leverage the benefits of technology in your classroom.

Content, content, and more content

With the Maple Application Center, the Maple Learn Gallery, and the Maple Flow Gallery, you have access to thousands of customizable documents created by Maplesoft experts and passionate users on a huge variety of topics.

Bootcamps

Maplesoft offers free, live bootcamps for you and your students, covering topics specific to the course and offering the opportunity to ask questions.

Training materials

Training videos, tutorials, examples, quick how-to guides, manuals, recorded webinars, and other resources help new users become expert users.

Live and Recorded Webinars

Maplesoft's monthly webinars provide an excellent opportunity to learn about interesting applications, new techniques, and products. Recordings are available on demand after the live events.

Maple Transactions

Maple Transactions is an open-access journal that publishes expositions on topics of interest to the Maple community. The journal is intended for a broad audience of researchers, educators, students, and anyone else with an interest in Maple, and includes both peer-reviewed research articles and general interest content. The journal is free to read, and free to publish in. www.mapletransactions.org

MaplePrimes™

MaplePrimes is an online community dedicated to sharing experiences, techniques, and opinions about Maplesoft products, as well as general interest topics in mathematics and engineering. It's a great place to ask questions! www.mapleprimes.com

Plus a Teacher Resource Center, a Student Help Center, and more!



Not Sure Which Maplesoft Product is Right for Your Class? Let us help you decide!



To help you decide if Maplesoft has the right solution for you and your students, we can provide you with:

- Product recommendations based on an assessment of your needs and goals
- Personalized product demonstrations
- Flexible licensing options to suit your budget, infrastructure, and policies
- Access to products so you can try them out for yourself

Contact us today to get started! www.maplesoft.com/suite



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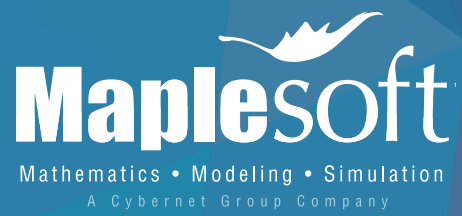
Maple Learn™



Maple Flow™



Maple™ Calculator



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