



Maplets for Calculus



Algorithmic and user-selected problems
 Users do *not* need to know any Maple syntax
 Hints and correct answers provided at the push of a button

Problems and concepts reinforced with 2D and 3D graphics, including animation
 Solutions checked step-by-step using powerful Maple computer algebra system

94 Drill-and-Practice Applets for Calculus

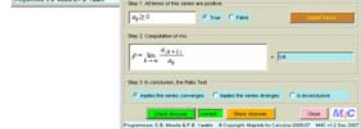
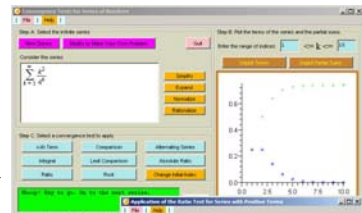
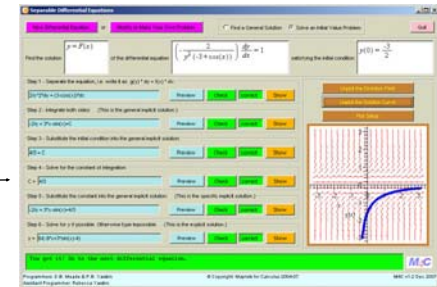
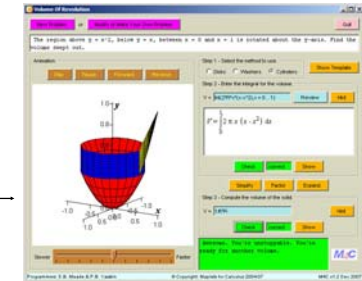
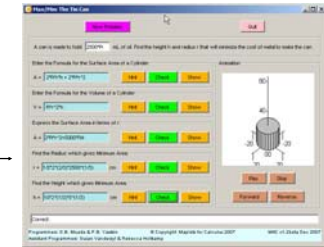
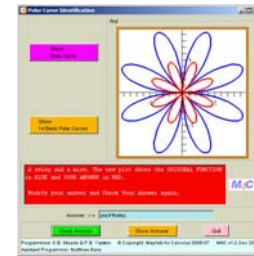
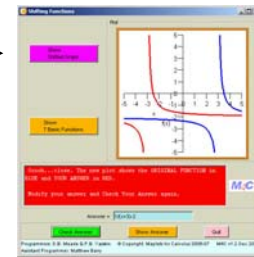
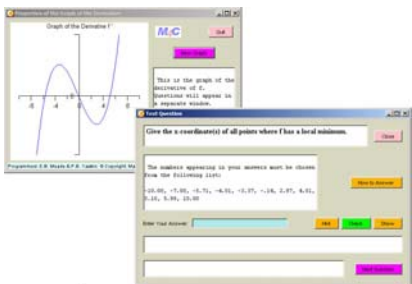
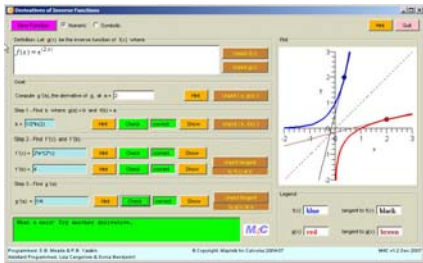
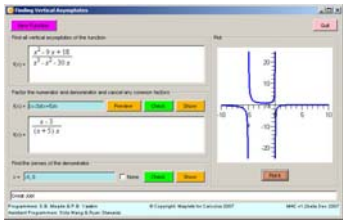
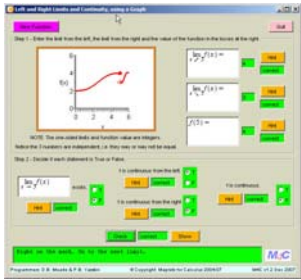
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*“Tutoring
 Without the
 Tutor”*

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- Pre-Calculus (22)
 - Basic 7 Functions (2D)
 - Shifting Functions (2D)
 - Reflecting Functions (2D)
 - Solving Linear Absolute Value Eqns (2D)
 - Factor a Quadratic
 - Shape of Quadratic: Completed Square (2D)
 - Shape of Quadratic: Depend of Coef (2D)
 - Maximum or Minimum of a Quadratic
 - Finding Vertical Asymptotes (2D)
 - Domain and Range Finder
 - Shifting Transcendental Functions (2D)
 - Radioactive Decay
 - Solving Logarithmic Equations
 - Pythagorean Theorem (2D)
 - Triangle Def'n of Trig Functions (2D)
 - Circle Def'n of Trig Functions (2D)
 - Shifting Trig Functions (2D)
 - Properties of Sine & Cosine Curves (2D)
 - Solving ASA Triangles with Trig Laws (2D)
 - Solving SAS Triangles with Trig Laws (2D)
 - 2D Vector Algebra (2D)
- Limits (8)
 - Left and Right Limits and Continuity: Graph (2D)
 - Left and Right Limits and Continuity: Numeric Data
 - Left and Right Limits and Continuity: Formula
 - The Epsilon-Delta Definition of Continuity (2D)
 - Precise Definition of a Limit (Linear Proofs)
 - Continuity of Piecewise Defined Functions (2D)
 - Intermediate Value Theorem
 - Bisection Method for Solving Continuous Eqns (2D)
- Differentiation (24)
 - From Secant Slopes to Tangent Slope, using a Graph and Numeric Data (2D)
 - From Secant Slopes to Tangent Slope using a Formula
 - Computing Tangent Lines
 - Chain Rule
 - Derivative Drill
 - Implicit Differentiation
 - Logarithmic Differentiation
 - Derivatives of Inverse Functions
 - Linear Approximation (2D)
 - Related Rates
 - Related Rates: The Ladder (2D)
 - From Position to Velocity to Acceleration
 - L'Hospital's Rule
 - Parametric Tangent Lines
 - Properties of Graph of Function – Terminology (2D)
 - Properties of Graph of Function (2D)
 - Properties of Graph of 1st Derivative (2D)
 - Properties of Graph of 2nd Derivative (2D)

- Max/Min: The Tin Can (2D)
- Linear and Quadratic Approximation (2D)
- Anti-Derivative Drill
- From Acceleration to Velocity to Position
- Area as an Antiderivative: Derivation of FTC (2D)
- Area as an Antiderivative: Compute Area (2D)
- Integration (28)
 - Integration by Substitution
 - Integration by Parts
 - Integration by Parts with Tabular Integration
 - Trig Integrals
 - Trig Substitutions
 - Partial Fractions: General Decomposition
 - Partial Fractions: Finding Coefficients
 - Partial Fractions: Evaluating the Integral
 - Indefinite Integral Drill
 - Definite Integral Drill
 - Left Riemann Sums
 - Right Riemann Sums
 - Trapezoid Rule
 - Simpson's Rule
 - Simpson's Rule Error Formula (2D)
 - Area of a Region (2D anim)
 - Average Value of a Function (2D)
 - Volume by Slicing (3D anim)
 - Volume of Revolution (3D anim)
 - Arc Length (2D anim)
 - Surface Area (3D anim)
 - Center of Mass of a Bar (2D)
 - Center of Mass of a Uniform Plate (2D)
 - Work: Spring
 - Work: Gravity
 - Work: Lifting a Rope (2D anim)
 - Work: Pumping a Liquid (2D)
 - Fluid Force (2D)
- Differential Equations (4)
 - Separable Differential Equations (2D)
 - Linear Differential Equations (2D)
 - Direction Fields (2D)
 - Mixing Problems (2D)
- Sequences and Series (4)
 - Sequence Drill (2D)
 - Geometric Series
 - Telescoping Series
 - Series Convergence Test Drill (2D)
- Curvilinear Coordinates (2)
 - Basic 14 Polar Curves (2D)
 - Polar Curve Identification (2D)
- Games (2)
 - Cryptogram Puzzle (2D)
 - The Plotting Game (2D)



Winner of the 2008 ICTCM Award for "excellence and innovation in using technology to enhance the teaching and learning of mathematics" at the 20th International Conference on Technology in Collegiate Mathematics sponsored by Pearson publishers.

System Requirements:
 Maple 12 (Most works in Maple 10 or 11)
 on either client or server
 Windows XP or Vista, Mac, Linux, or Unix

Detailed Information:
 See <http://m4c.math.tamu.edu/>
Trial License for Faculty:
 Available from the Authors.



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