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WebMathematica: analytical and visualization possibilities.


Programming elements. Simulation.

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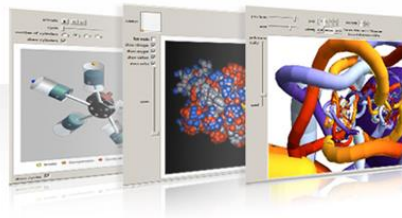
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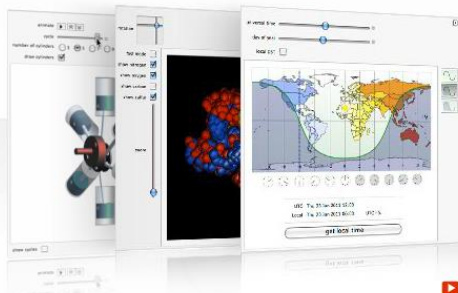
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Bring ideas to life

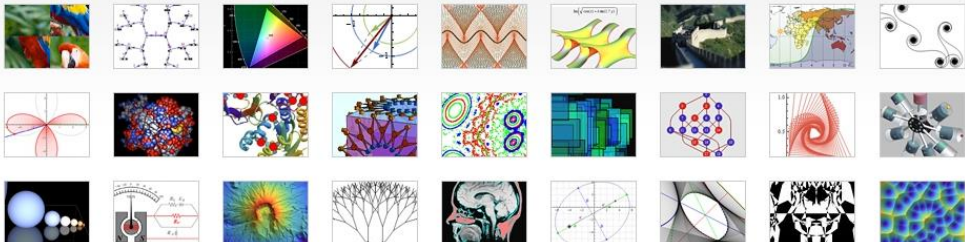
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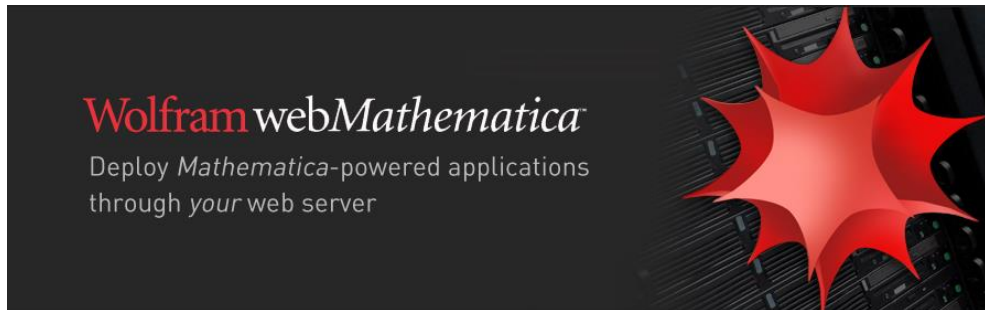
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<http://www.wolfram.com/products/webmathematica/>

I. Please refer to the material "New features of webMathematica":

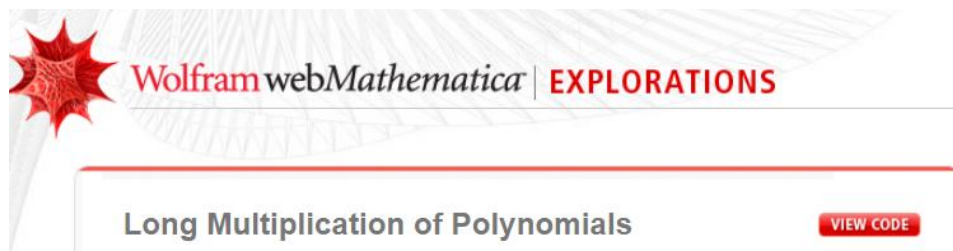
 reference.wolfram.com/mathematica/webMathematica/tutorial/NewFeatures.html



- What Is webMathematica?
- Examples;
- Online Documentation.

Solve the following exercises Using webMathematica.

<http://library.wolfram.com/webMathematica/Education/LongMultiply.jsp>



Exercise 1. Find the partial fraction decomposition of $\frac{x^2-4x+8}{(x^2-4)(x^2-4)}$.

<http://library.wolfram.com/webMathematica/Education/WalkD.jsp>



Exercise 2. Calculate derivative f' , f'' for functions

a) $f = \cos(2 \ln x)$; b) $f = e^{\sin(x+\pi)}$; c) $f = \frac{x^5+8}{(2x-3)^2}$.

library.wolfram.com/webMathematica/CalculusWiz/AreaSolver.jsp

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Area between Curves VIEW CODE

Suppose $f[x]$ and $g[x]$ are continuous with $f[x]$ above $g[x]$, then the area between the curves $y = f[x]$ and $y = g[x]$ and the lines $x = a$ and $x = b$ is given by

$$\int_a^b (f[x] - g[x]) dx.$$

Area between $y = x^2$ and $y = \sqrt{x}$

Enter the next computation to see graphs of $y = x^2$ (green), $y = \sqrt{x}$ (orange), and the region between the curves (blue).

Give the function:
 $f[x] =$

Give the function:
 $g[x] =$

Give the lower limit of x:
 $a =$

Give the upper limit of x:
 $b =$

DO IT

Exercise 3. Calculate the area between the curves $y = \cos x$ and $y = \sqrt{x}$, where $0 < x < 3\pi$.

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Three-Dimensional Plotting VIEW CODE

In this example, `Plot3D` takes three arguments: a function of two variables (in this case, specified as x and y) in standard *Mathematica* notation, a list of the first variable together with its minimum and maximum plotting limits, and a similar list for the second variable.

`Plot3D[Sin[x y]^2 , {x, 0 , 2Pi } , {y, 0 , 2Pi }]`

VISUALIZE

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Exercise 4. Draw a graph of the surface $z = x - 2\cos^4(xy)$, where $-\pi \leq x \leq \pi$, $-\pi \leq y \leq \pi$.