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WebMathematica: możliwości analityczne i wizualizacyjne. Elementy programowania. Symulacja.

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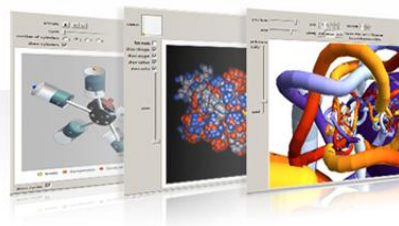
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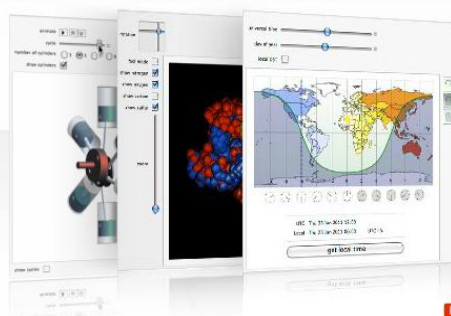
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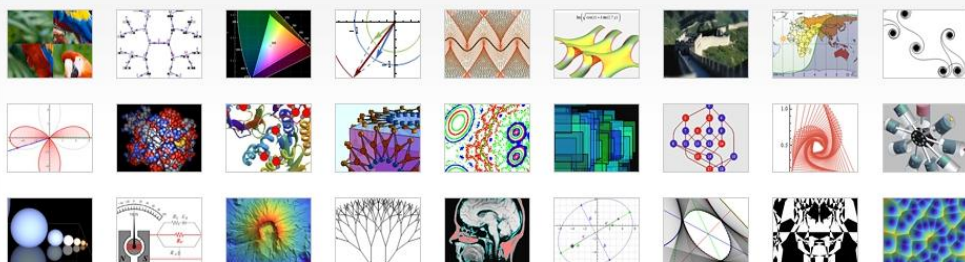
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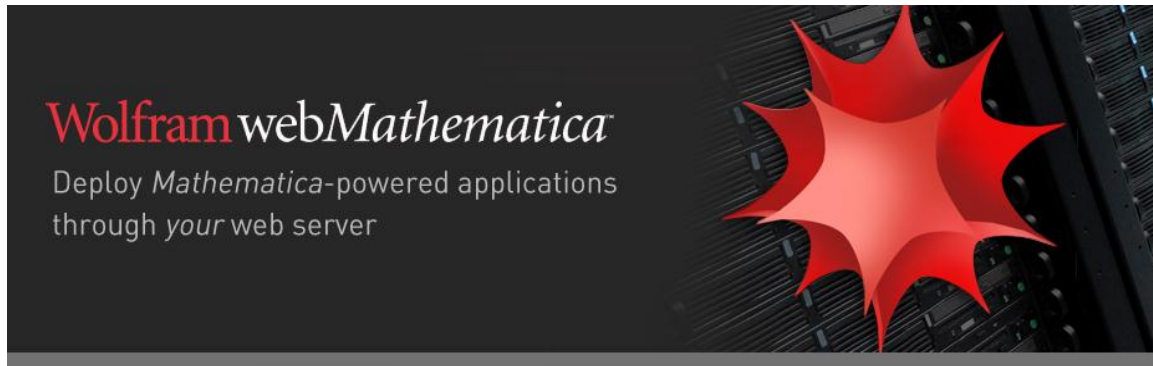
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<http://www.wolfram.com/products/webmathematica/>

I. Proszę zapoznać się z materiałem „Nowe funkcje webMathematica”:

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



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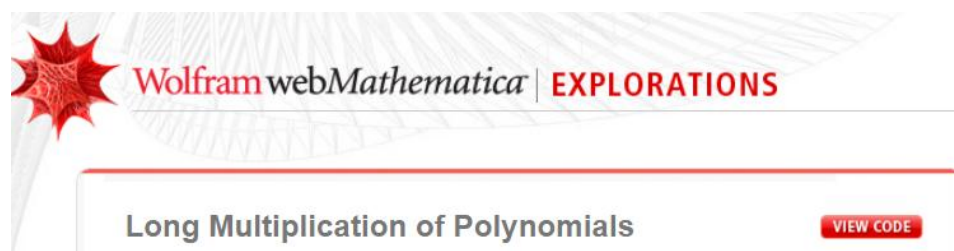
- Czym jest webMathematica?

- Przykłady;

- Online Documentation.

Za pomocą webMathematica rozwiązać następujące zadania.

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



Zadanie 1. Znaleźć częściowy rozkład frakcyjny

(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



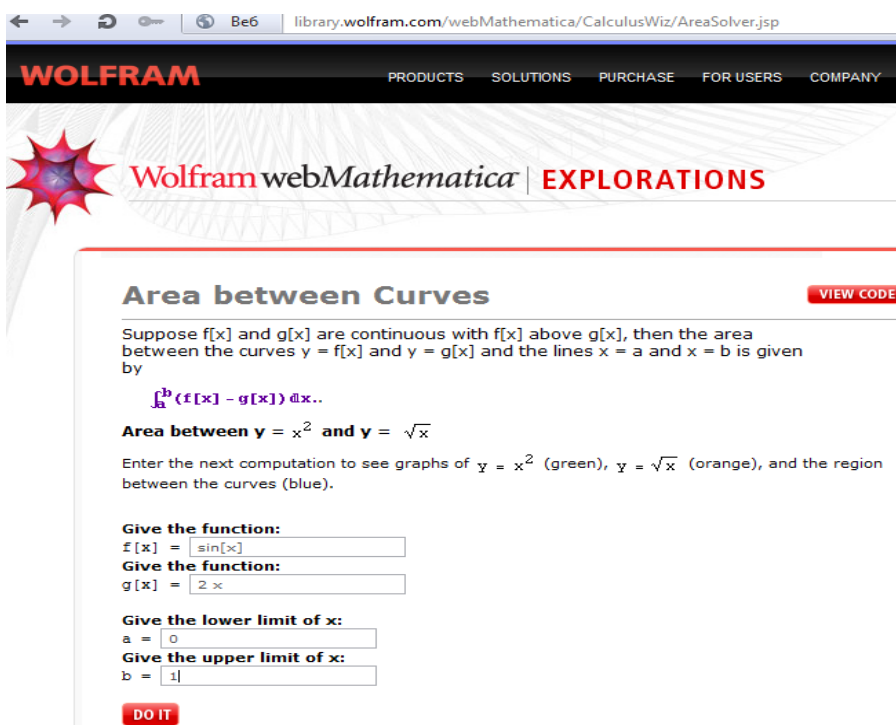
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Step-by-Step Derivatives

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Zadanie 2. Obliczyć pochodne f' , f'' dla

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



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Area between Curves

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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:
 $f[x] =$

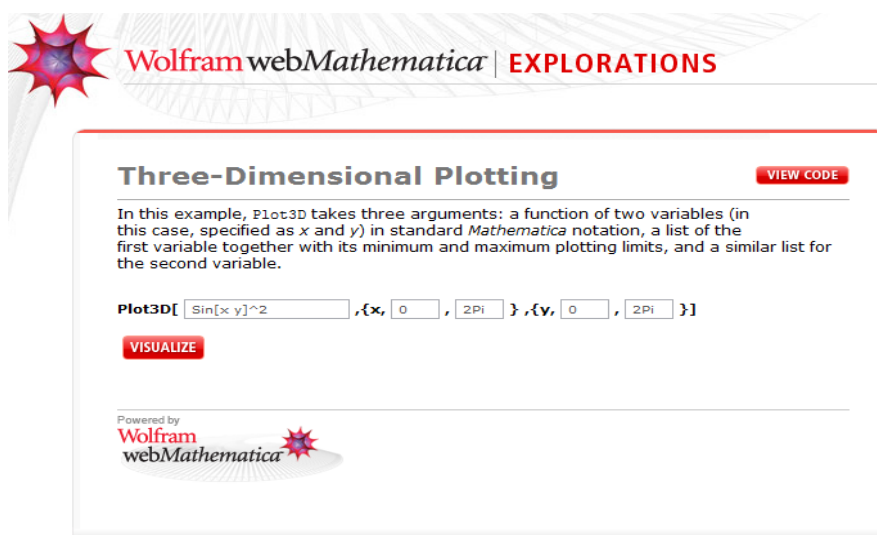
Give the function:
 $g[x] =$

Give the lower limit of x:
 $a =$

Give the upper limit of x:
 $b =$

[DO IT](#)

Zadanie 3. Obliczyć pole między krzywymi $y = \cos x$ i $y = \sqrt{x}$, gdzie $0 < x < 3\pi$.



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Three-Dimensional Plotting

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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 }]`

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Zadanie 4. Narysować wykres $z = x - 2\cos^4(xy)$, gdzie $-\pi \leq x \leq \pi$, $-\pi \leq y \leq \pi$.