

# GUI input tools for Mathematics

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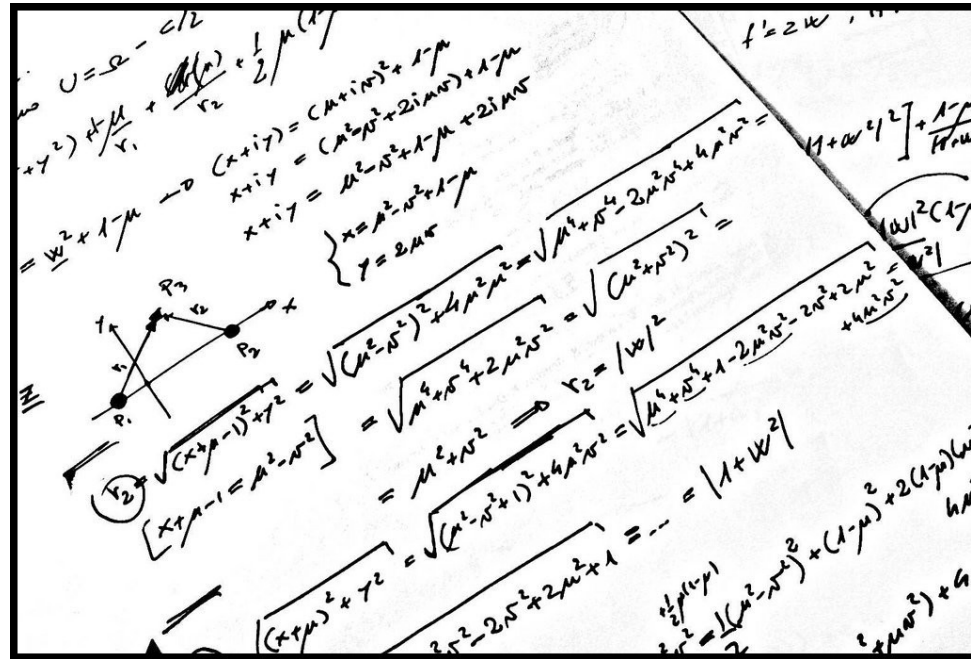
9 September 2009

# GUI is nice to end users

Using emacs to edit LaTeX code then run  $n$  command lines to compile and output a pdf may be fun, but only to a particular type of people.

# Their Purpose

From:



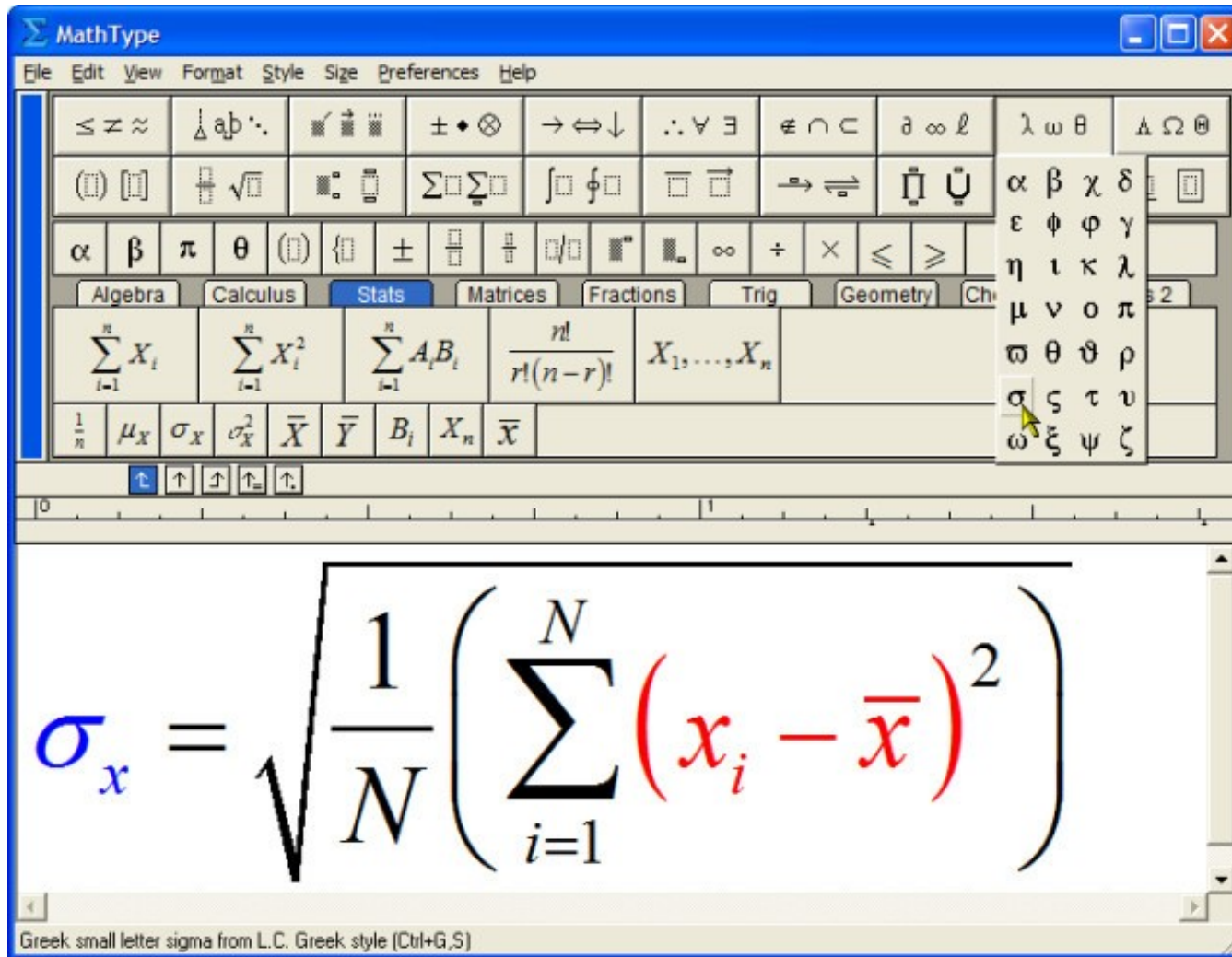
To:

A portable, standardised, digital format that we can share integrate and reuse.

# Tools Survey: What's around ?

- MathType
- MathTran
- Wiris
- Edoboard
- Sitmo
- Word 2007
- Formulator
- Publicon (Wolfram Research)
- Math Magic
- Detexify
- Math Input Panel (Windows 7)

# MathType



<http://www.dessci.com/en/products/mathtype/>

# MathType

## Pros

- + Point-and-click editing (WYSIWYG).
- + TeX/LaTeX/MathML compatible.
- + Feature Rich.
- + Interoperable with many apps.

## Cons

- Desktop client.
- Non Free (100\$ for v6.5).

<http://www.dessci.com/en/products/mathtype/>

# MathTran

$$M_t^a(h)/T_a^r(n)$$

Latest Formulas

## Add a new formula

Title

Preview

$$\langle A \rangle = \sum_i p_i A_i$$

A

Source

```
\langle A \rangle = \sum_i p_i A_i
```

Description

Is public

*If public, can be seen by any visitor to the site.*

Tags

Add

## Help area

sm358

1 2 3 4

B

- Eigenfunctions, 1-D infinite square well
- Elementary functions, cosh and sinh
- Elementary functions, exp and ln
- Energy levels, 1-D infinite square well
- Expectation value (1)
- Expectation value (2)
- Gauss's law
- Harmonic oscillator, commutation relation
- Harmonic oscillator, energy
- Harmonic oscillator, Hamiltonian

## Harmonic oscillator, commutation

$$\widehat{A}\widehat{A}^\dagger - \widehat{A}^\dagger\widehat{A} = 1$$

```
\widehat{\rm A}\widehat{\rm A}^\dagger - \widehat{\rm A}^\dagger\widehat{\rm A} = 1
```

Operators are set in Roman using `{\rm ...}`, rather than

<http://www.mathtran.org>

# MathTran

## Pros

- + Uses a variant of TeX.
- + Realtime output rendering.
- + Web based.
- + Free & Open Source.
- + FAB (formula autobuild) editing.

## Cons

- No visual shortcuts to input equations.
- TeX knowledge required.

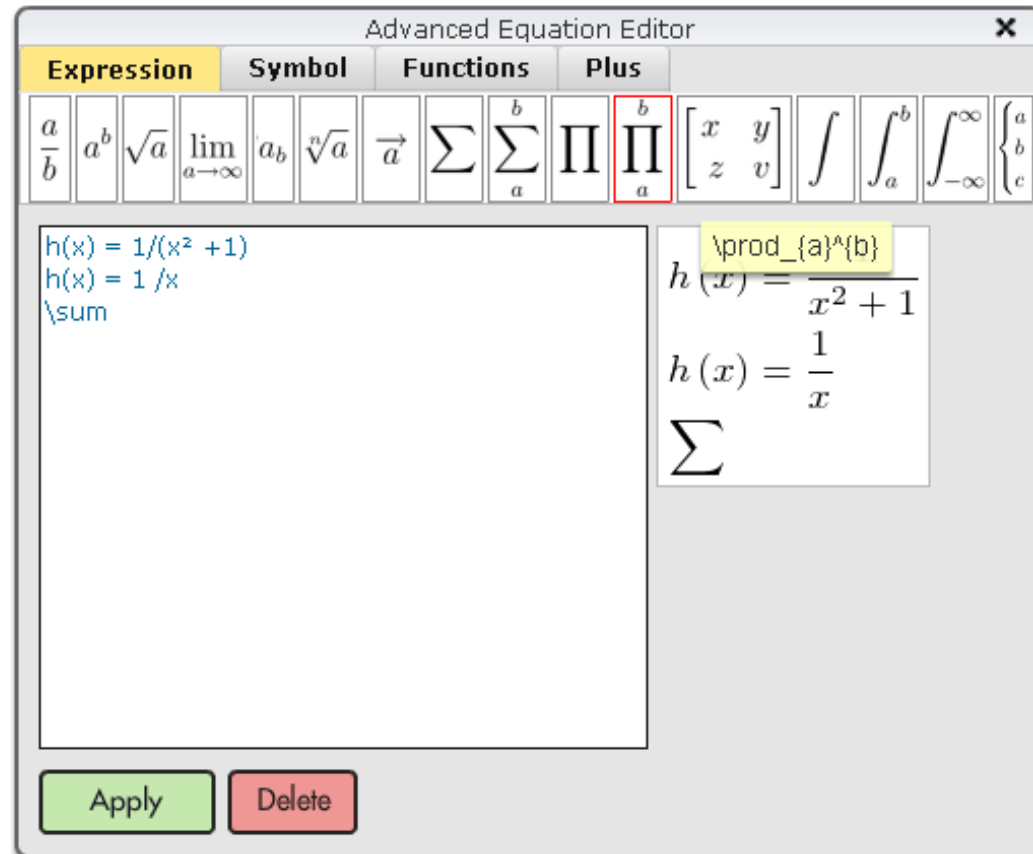
<http://www.mathtran.org>



# Edo board

$h(x) = 1/(x^2 + 1)$   
 $h(x) = 1 /$

Avancée | Mémo

$$h(x) = \frac{1}{x^2 + 1}$$
$$h(x) = 1 /$$


<http://edoboard.com>

# Edo board

## Pros

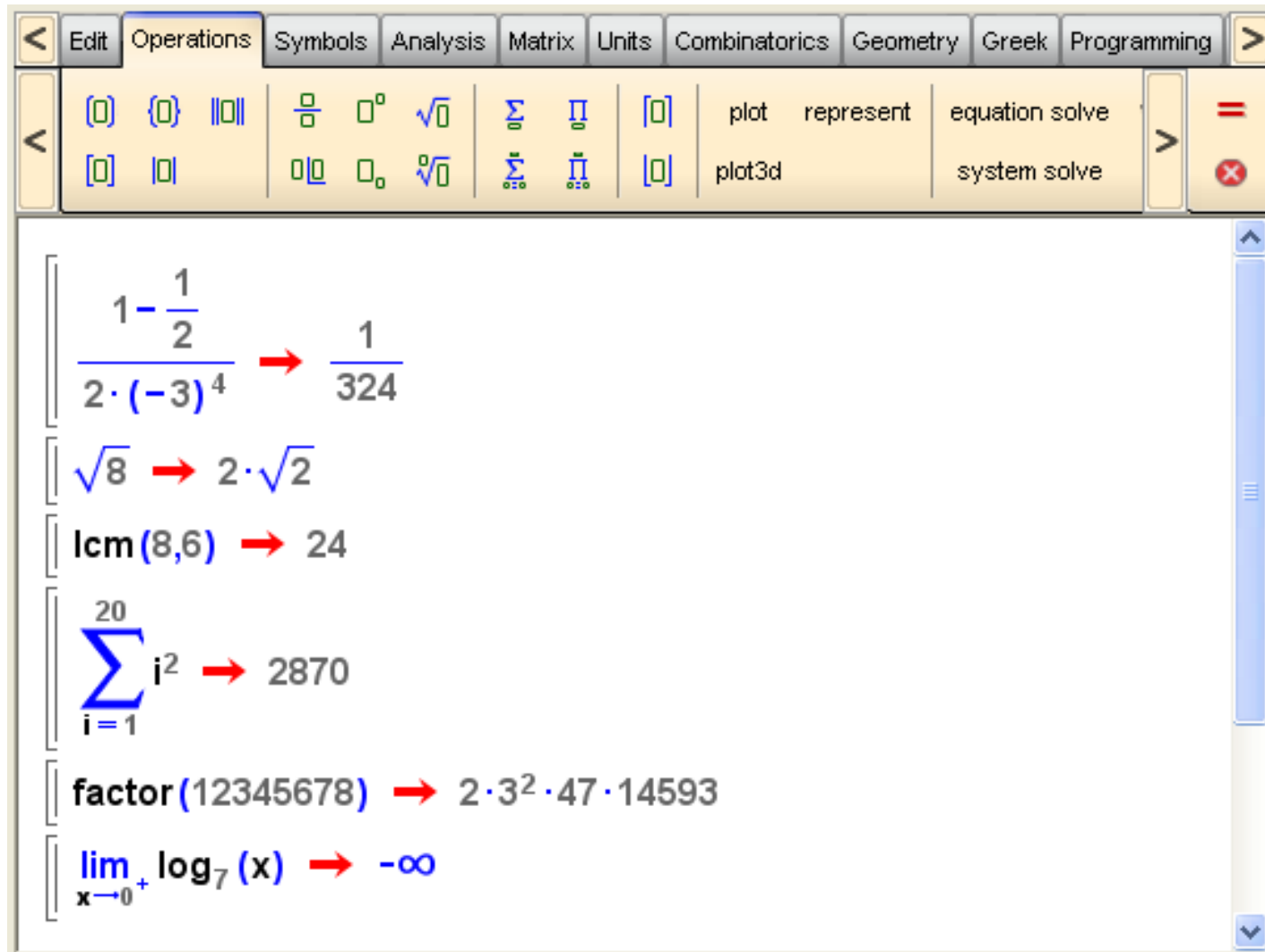
- + Uses Mathtran as a Web Service (TeX).
- + Fit for simple Maths.
- + Live collaboration.
- + Hybrid editing WYSIWYG and FAB (formula autobuild).

## Cons

- Flash Based.
  - Slow on Linux.
  - Takes some time to Load.
- Wont be free for ever.

<http://edoboard.com>

# Wiris



The screenshot displays the Wiris software interface. At the top, there is a menu bar with tabs for 'Edit', 'Operations', 'Symbols', 'Analysis', 'Matrix', 'Units', 'Combinatorics', 'Geometry', 'Greek', and 'Programming'. Below the menu bar is a toolbar containing various mathematical symbols and functions, such as fractions, powers, roots, summation, and integration. The main workspace contains several mathematical expressions and their results:

- $\frac{1 - \frac{1}{2}}{2 \cdot (-3)^4} \rightarrow \frac{1}{324}$
- $\sqrt{8} \rightarrow 2 \cdot \sqrt{2}$
- $\text{lcm}(8,6) \rightarrow 24$
- $\sum_{i=1}^{20} i^2 \rightarrow 2870$
- $\text{factor}(12345678) \rightarrow 2 \cdot 3^2 \cdot 47 \cdot 14593$
- $\lim_{x \rightarrow 0^+} \log_7(x) \rightarrow -\infty$

<http://www.wiris.com/>

# Wiris

## Pros

- + Web & Desktop Client.
- + Supports MathML and OpenMath.
- + Hybrid editing.
- + Feature Rich: Solver and Grapher.
- + Cross-platform.

## Cons

- No LaTeX support yet.
- Non free.
- Java Based.

<http://www.wiris.com/>

# Sitmo

Equation Editor

s i t m o [www.sitmo.com](http://www.sitmo.com)

Help Characters **Math** Symbols

$\frac{a}{b}$   $a^b$   $a_b$   $\sqrt{a}$   $\sqrt[n]{a}$   $\sum$   $\sum_a^b$   $\prod$   $\prod_a^b$   $\int$   $\int_a^b$   $\int_{-\infty}^{\infty}$   $\oint$   $\lim_{a \rightarrow \infty}$

$e^{i\pi} = -1$   
 $3x + 5\sqrt{25}$

175%

$e^{i\pi} = -1$   
 $3x + 5\sqrt{25}$

click image to download  
[permanent link to this image](#)

Gadgets powered by Google

<http://www.sitmo.com/latex/>

# Sitmo

## Pros

- + LaTeX compatible.
- + Realtime output rendering.
- + Web based (HTML/Js).
- + Free.
- + Hybrid Editing.

## Cons

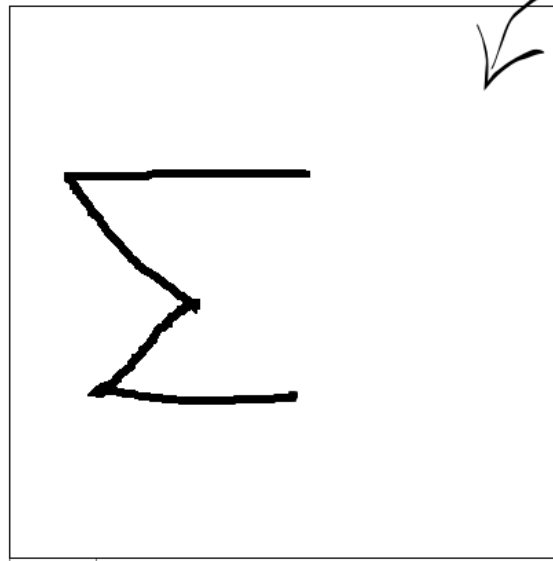
- LaTeX knowledge required.

<http://www.sitmo.com/latex/>

# Detexify

## Detexify<sup>2</sup> - LaTeX symbol classifier

[classify](#) [symbols](#) [blog](#)



clear

### What is this?

Anyone who works with LaTeX knows how time-consuming it can be to find a symbol in [symbols-a4.pdf](#) that you just can't memorize. Detexify is an attempt to simplify this search.

### How does it work?

Just draw the symbol you are looking for into the square area above and look what happens!

*Draw here!*

Did this help?

Hosting Detexify costs money and if it helps you may consider helping to pay the hosting bill.



Score: 29.7363414023985

`\sum`  
mathmode



Score: 59.472682804797

`\usepackage{textcomp}`  
`\texteuro`  
textmode



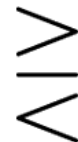
Score: 59.472682804797

`\Sigma`  
mathmode



Score: 59.472682804797

`\epsilon`  
mathmode



Score: 59.472682804797

`\usepackage{amssymb}`  
`\gtreqless`  
mathmode

The symbol is not in the list? [Select from the complete list!](#)

<http://detexify.kirelabs.org/classify.html>

# Detexify

## Pros

- + iPhone and Android Apps.
- + Super Simple (Handwritten).
- + Free.
- + Web based (HTML/Js).

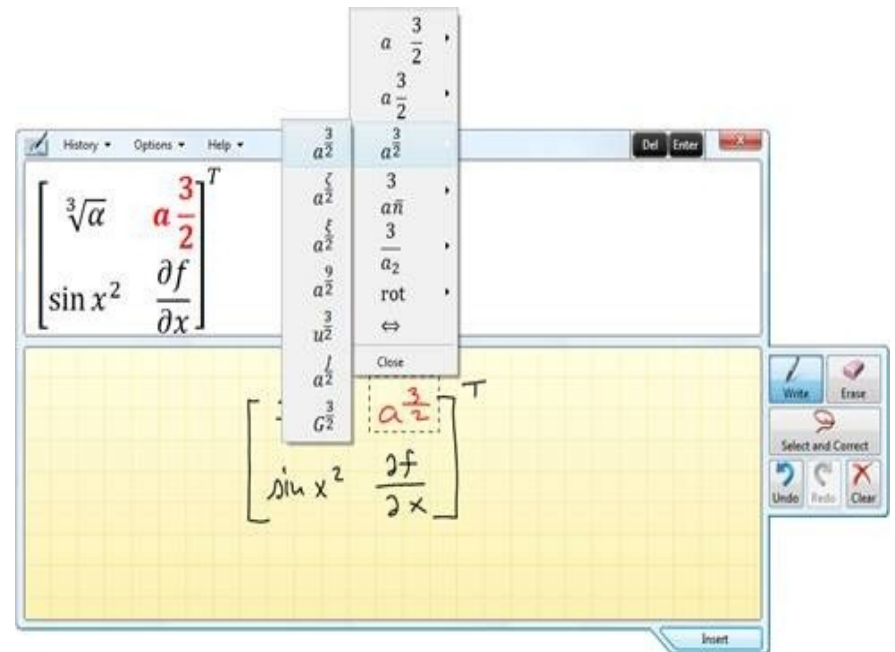
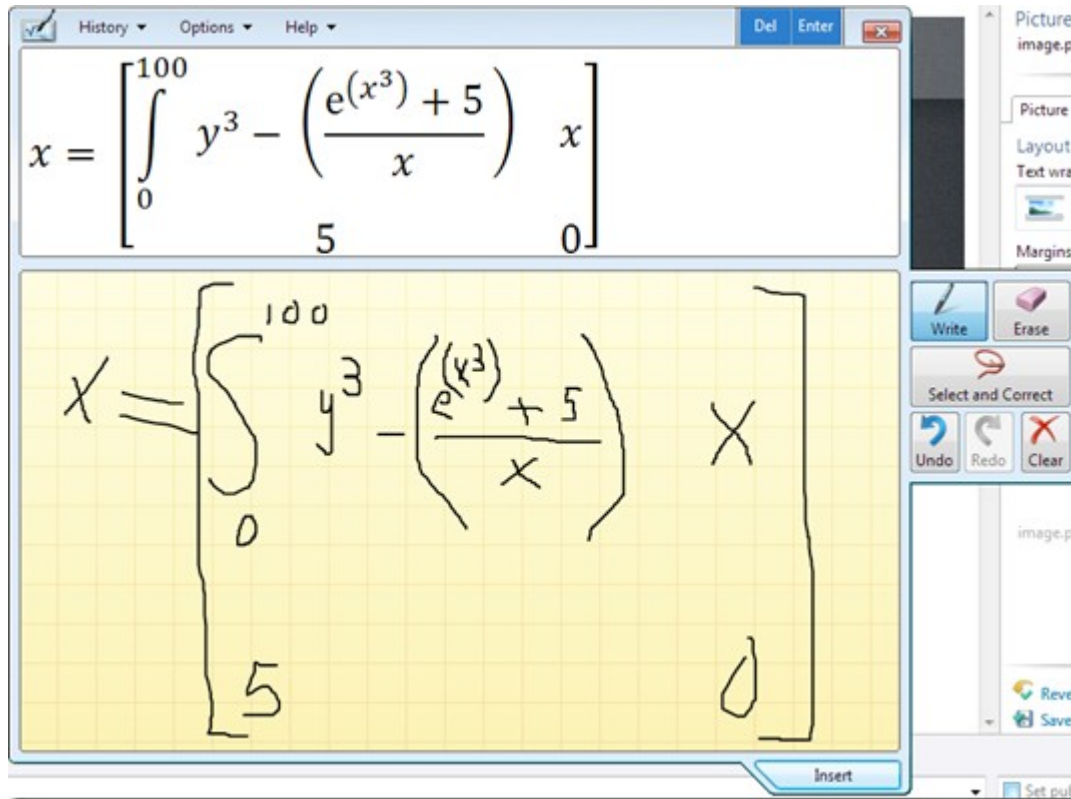
## Cons

- Only works for one character at a time.
- You need a recent browser supporting HTML5.

<http://detexify.kirelabs.org/classify.html>






# Math Input Panel (Windows 7)





<http://bit.ly/3Uf6dT>

# Math Input Panel (Windows 7)

## Pros

-  Can recognise a whole equation.
-  Natural handling (Handwritten).
-  Export as MathML.

## Cons

-  Pen tablet usage is advised.
-  Windows 7 only.

<http://bit.ly/3Uf6dT>

# Word 2007

Formule de Pascal et triangle de Pascal.docx - Microsoft Word

Accueil Insertion Mise en page Références Publipostage Révision Affichage Compléments Création

Équation Professionnel Linéaire Texte normal

Symboles Structures

lim Limite et journal

Fonctions

log log lim

min max ln

Fonctions communes

lim (1 + 1/n)^n max xe^-x^2

## Formule de Pascal et triangle de Pascal

Rappelons ici que l'on définit les coefficients binomiaux de la façon suivante :

$$\forall n \in \mathbb{N}, \forall k \in \llbracket 0, n \rrbracket, \binom{n}{k} = \frac{n!}{k!(n-k)!}$$

On a alors la formule dite de Pascal

$$\forall n \in \mathbb{N}, \forall k \in \llbracket 1, n-1 \rrbracket, \binom{n}{k} = \binom{n-1}{k} + \binom{n-1}{k-1}$$

Démontrons cette formule

$$\begin{aligned} \binom{n-1}{k} + \binom{n-1}{k-1} &= \frac{(n-1)!}{k!(n-1-k)!} + \frac{(n-1)!}{(k-1)!(n-1-(k-1))!} \\ &= \frac{(n-1)!}{k!(n-k-1)!} + \frac{(n-1)!}{(k-1)!(n-k)!} \\ &= \frac{(n-1)!}{(k-1)!(n-k-1)!} \left( \frac{1}{k} + \frac{1}{n-k} \right) \\ &= \frac{(n-1)!}{(k-1)!(n-k-1)!} \frac{n}{k(n-k)} \\ &= \frac{n!}{k!(n-k)!} \\ &= \binom{n}{k} \end{aligned}$$

On utilise la formule :  $m! = (m-1)! \times m$

Même formule à l'envers

Quelle est la signification pratique de ce résultat ?

Page : 1 sur 4 Mots : 718

100%

démarrer

Rechercher sur l'ordi

14:14

# Word 2007

## Pros

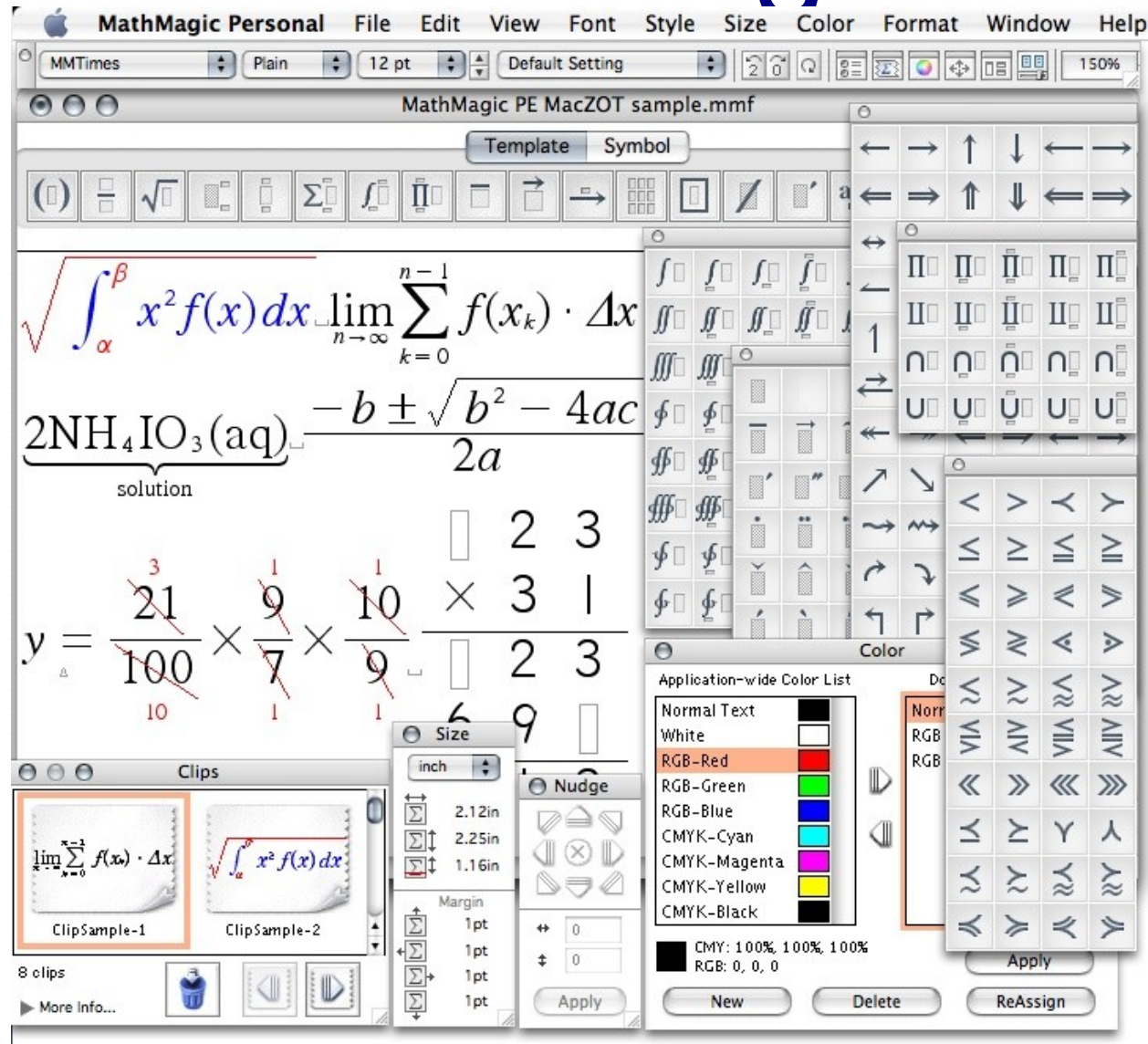
- + MathML compatible.
- + Point-and-click editing (WYSIWYG).
- + Feature Rich.
- + Microsoft Office Integration.

## Cons

- Windows only.
- Non Free.
- No official LaTeX support.
- Desktop Client.

Microsoft Office

# Math Magic



<http://www.mathmagic.com/>

# Math Magic

## Pros

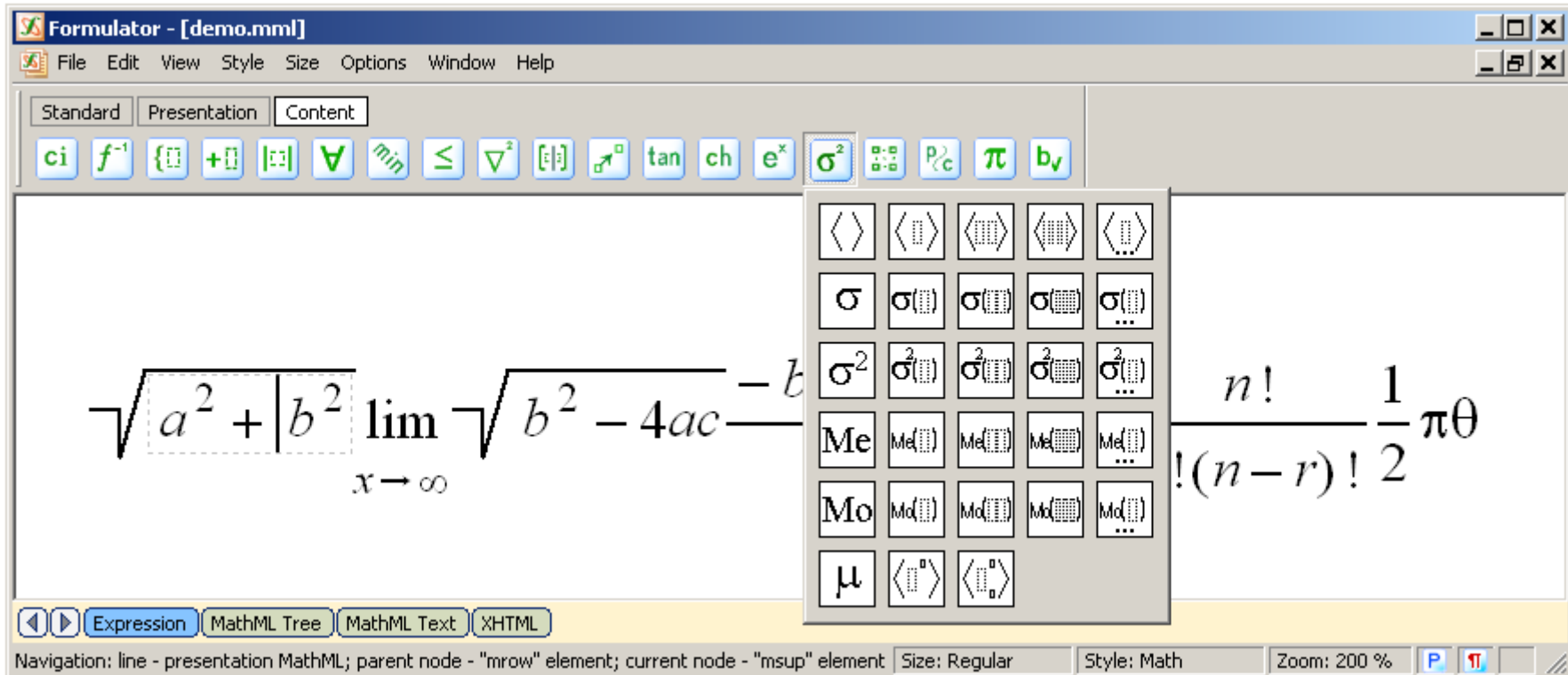
- + LaTeX/MathML/MathType compatible, and more.
- + Heavily customizable via templates.
- + Feature rich and powerful.
- + Point-and-click editing.

## Cons

- Desktop client, Win & Mac.
- Non free - Regular version 300£ p.a.

<http://www.mathmagic.com/>

# Formulator



<http://bit.ly/1PeGRA>



# Formulator

## Pros

- + MathML compatible.
- + Free.
- + Simple.
- + Point-and-click editing

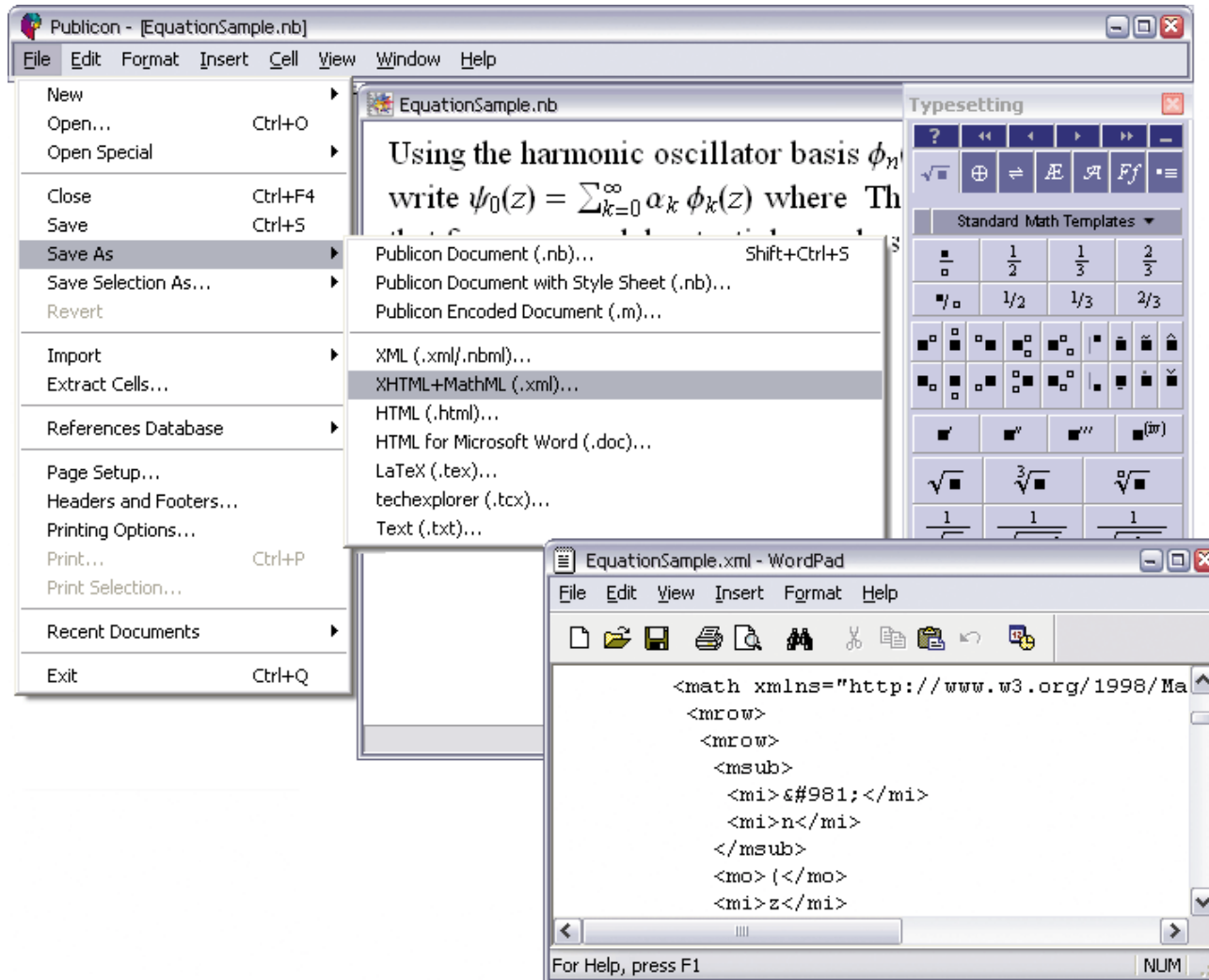
## Cons

- Desktop client.
- Windows only.

<http://bit.ly/1PeGRA>







# Publicon - Wolfram Research






<http://www.wolfram.com/products/publicon/index.html>

# Publicon - Wolfram Research

## Pros

-  Math and chemistry typesetting.
-  \*-TeX /MathML plus BioMed XML.
-  Highly specialised for Science.
-  Point-and-click editing.

## Cons

-  Non free 100£ p.a.
-  Windows and Mac.
-  Desktop client.

<http://cnx.org/>

# What should i use ? For Moodle (LMS)

MathType

Wiris

# What should i use ?

## Web Based Equation Editor

Wiris

Sitmo

Mathtran

# What should i use ?

## Desktop apps with Advance Features

Publicon

MathType

Math Magic

~Word

# What should i use ?

## Live Math Tutoring

## Edoboard

# What should i use ?

## HandWriting Recognition

Detexify

Math Input Panel

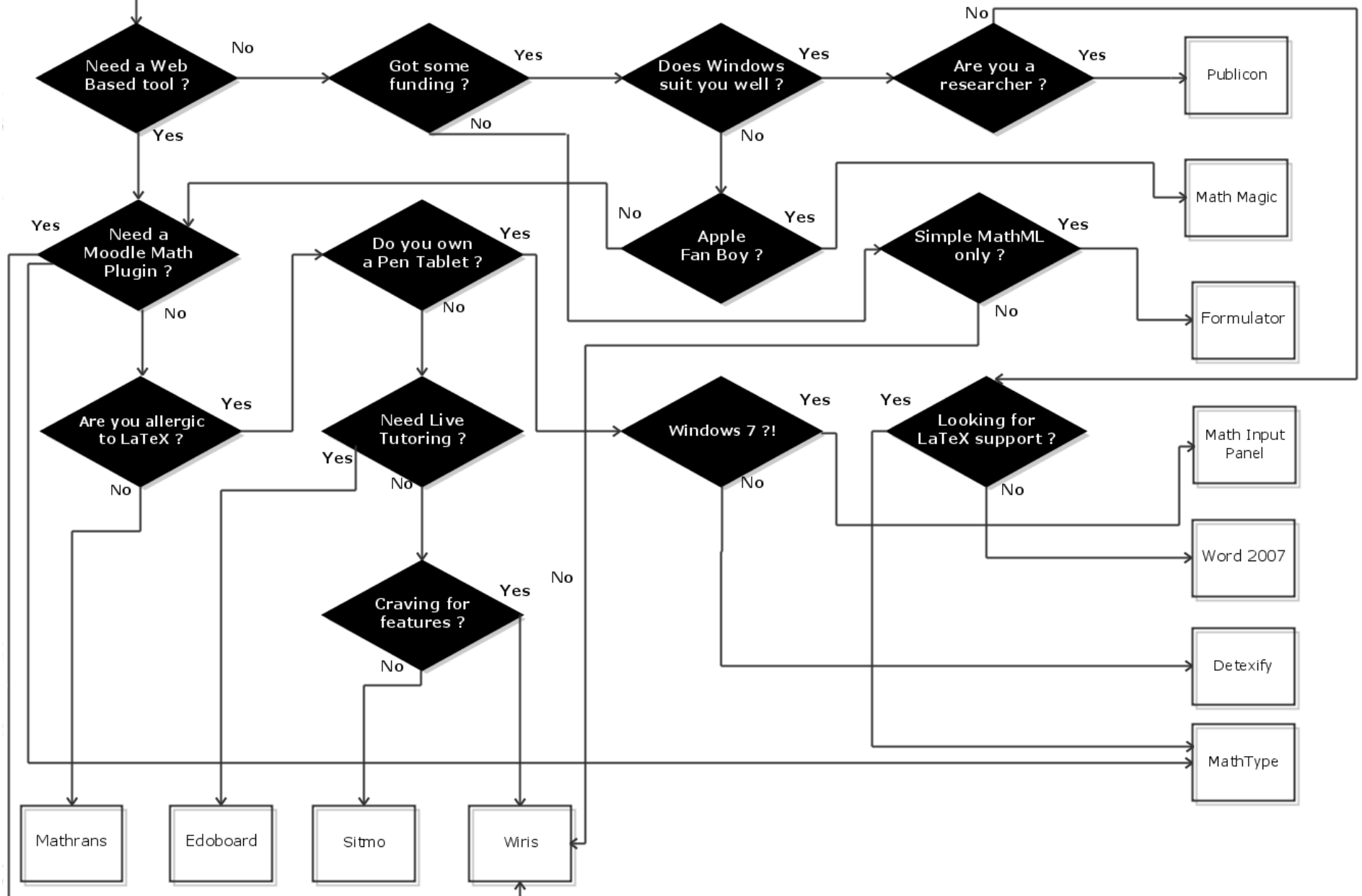
# What should i use ?

## Free Simple Desktop Equation Editor

### Formulator



# Which Equation Editor should I Use ?



Mathtrans: <http://www.mathtran.org>

Formulator: <http://bit.ly/1PeGRA>

Edoboard: <http://www.edoboard.com>

Publicon: <http://www.wolfram.com/products/publicon/index.html>

MathMagic: <http://www.mathmagic.com/>

# What do you use ?

MathType: <http://www.dessci.com/en/products/mathtype/>

Math Input Panel: <http://bit.ly/3Uf6dT>

Word 2007: <http://bit.ly/SGqoE>

Detexify: <http://detexify.kirelabs.org/classify.html>

Sitmo: <http://www.sitmo.com/latex/>

Wiris: <http://www.wiris.com>