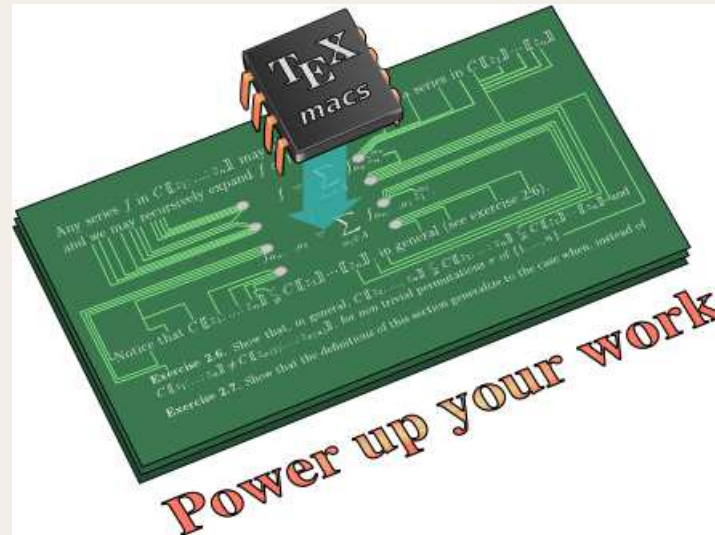# GNU TeXmacs

Power up your work

Web: www.texmacs.org

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Overview

« GNU T$_E$X$_{MACS}$ is a free *wysiwyw* editing platform
with special features for scientists. »

- Free software.

- High quality typesetting.

- User friendly interface.

- Structured documents and user-definable style files.

- Provides SCHEME as an extension language.

- Many interfaces with computer algebra systems.

- Presentation mode and technical drawing tool.

- Converters for L^{A}T$_E$X, HTML, MATHML, XML.

- Under development: support for oriental languages.

Remind:

- Example.

- Structural variants.

- "Source code".

- Macros.

⇑ Simple computations

(C1) `diff (x^x^x, x);`

(D3) $x^{x^x}\left(x^x \log x \left(\log x + 1\right) + x^{x-1}\right)$

(C4) `integrate (d1, x);`

(D5) $e^{\log x} e^{x \log x}$

(C6)

⇑ Mathematical input

(C2) $\mathrm{integrate}\left(\dfrac{x^3}{x^2 - x + 11}, x\right);$

(D7) $-5 \log\left(x^2 - x + 11\right) - \dfrac{32 \arctan\left(\dfrac{2\,x - 1}{\sqrt{43}}\right)}{\sqrt{43}} + \dfrac{x^2 + 2\,x}{2}$

(C8) $\mathrm{expand}\left(\left(\alpha + \beta + \omega\right)^5\right);$

(D16) $\omega^5 + 5\,\beta\,\omega^4 + 5\,\alpha\,\omega^4 + 10\,\beta^2\,\omega^3 + 20\,\alpha\,\beta\,\omega^3 + 10\,\alpha^2\,\omega^3 + 10\,\beta^3\,\omega^2 + 30\,\alpha\,\beta^2\,\omega^2 + 30\,\alpha^2\,\beta\,\omega^2 + 10\,\alpha^3\,\omega^2 + 5\,\beta^4\,\omega + 20\,\alpha\,\beta^3\,\omega + 30\,\alpha^2\,\beta^2\,\omega + 20\,\alpha^3\,\beta\,\omega + 5\,\alpha^4\,\omega + \beta^5 + 5\,\alpha\,\beta^4 + 10\,\alpha^2\,\beta^3 + 10\,\alpha^3\,\beta^2 + 5\,\alpha^4\,\beta + \alpha^5$

(C17)

(C3) `plot3d(2^(-u^2+v^2),[u,-5,5],[v,-7,7]);`

(D1) 0

(C2)

⇑ Pari

```
pari] factor(1727517264162465124653542351215727165675)
```

$$\%5 = \begin{pmatrix} 5 & 2 \\ 43 & 1 \\ 89 & 1 \\ 587 & 1 \\ 2441 & 1 \\ 21640477 & 1 \\ 58230593345740051 2439 & 1 \end{pmatrix}$$

```
pari] mathilbert (5)
```

$$\%4 = \begin{pmatrix} 1 & \frac{1}{2} & \frac{1}{3} & \frac{1}{4} & \frac{1}{5} \\ \frac{1}{2} & \frac{1}{3} & \frac{1}{4} & \frac{1}{5} & \frac{1}{6} \\ \frac{1}{3} & \frac{1}{4} & \frac{1}{5} & \frac{1}{6} & \frac{1}{7} \\ \frac{1}{4} & \frac{1}{5} & \frac{1}{6} & \frac{1}{7} & \frac{1}{8} \\ \frac{1}{5} & \frac{1}{6} & \frac{1}{7} & \frac{1}{8} & \frac{1}{9} \end{pmatrix}$$

```
pari] factor
```

```
octave> M = 
```
$$M = \begin{pmatrix} 1 & \frac{1}{2} & \frac{1}{3} \\ \frac{1}{2} & \frac{1}{3} & \frac{1}{4} \\ \frac{1}{3} & \frac{1}{4} & \frac{1}{5} \end{pmatrix};$$
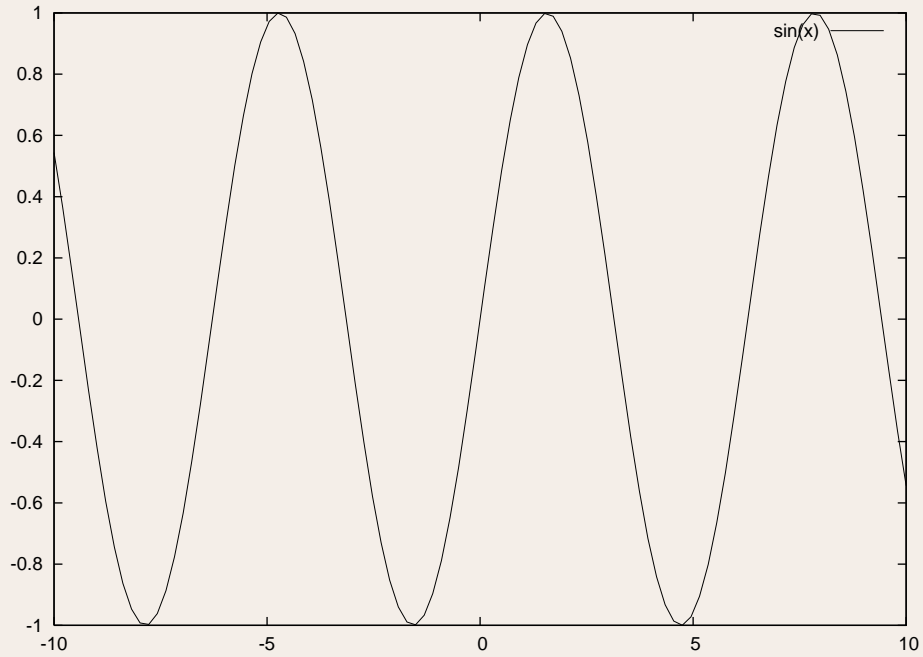
```
octave> 
```
M^2

$$\begin{pmatrix} 1.361 & 0.75 & 0.525 \\ 0.75 & 0.4236 & 0.3 \\ 0.525 & 0.3 & 0.2136 \end{pmatrix}$$

```
octave>
```

⇑ Gnuplot

GNUplot] $\text{plot}\,\sin(x)$

GNUplot]

Evaluation of $1+1$.

Differentiate x^{x^x}.

Some operations on the matrix

$$\begin{pmatrix} b+a & 3 & a^2-b^3 \\ b & 7 & a \\ 0 & a & b \end{pmatrix}$$

Computation switch $\boxed{\text{Busy...}}$.

Plot

Plot surface
Function
f: $\boxed{\sin(x^2+y^2)}$
Range
x: $\boxed{-\pi}$ — $\boxed{\pi}$
y: $\boxed{-\pi}$ — $\boxed{\pi}$