MAXIMA-TEX v1.0

Maxima and LaTeX integration

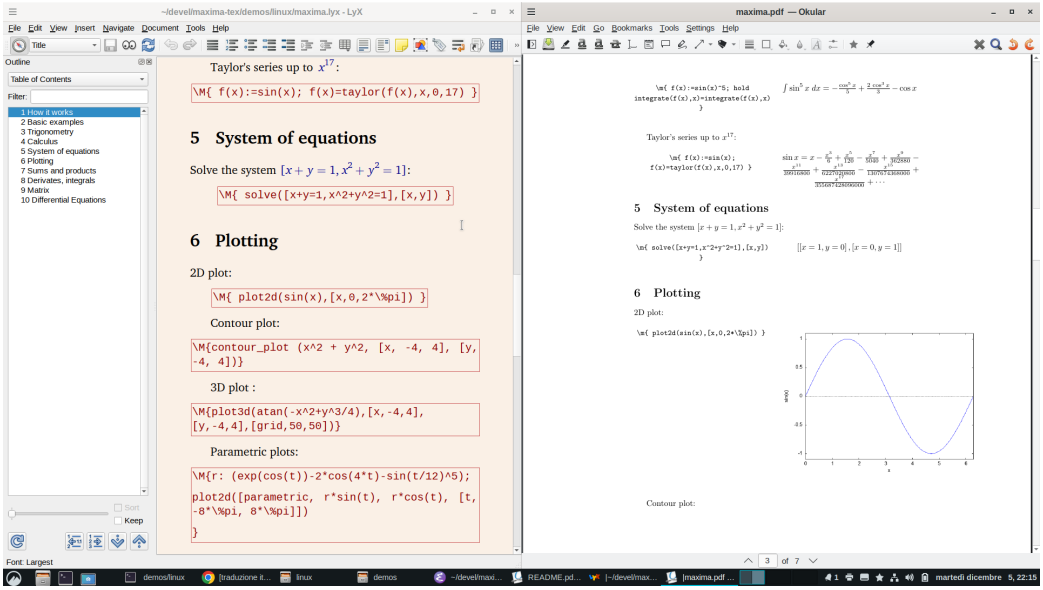

Figure 1: lyx

License

The scope

This package allows to embed MAXIMA code in LaTeX, in the form [1]):

```
\m{expr1; expr2; expr3; ...}
```

The macro itself will be replaced by the result of Maxima's computation.

> **Note** *If the last expresson is ended with a ";", the result of the whole computation will be discarded.*

[1]) In the LyX screenshots above here, the \M macro is also used. It is completely identical to \m, but produces a result in two columns: on the first the Maxima code; in the second the TeX output.

Examples

1. 2D plot

```
\m{ plot2d(sin(x),[x,0,2*\%pi]) }
```

will produce a 2D plot, using *gnuplot* as backend.

1. Parametric plots:

```
\m{
r: (exp(cos(t))-2*cos(4*t)-sin(t/12)^5);
plot2d([parametric, r*sin(t), r*cos(t), [t, -8*\%pi, 8*\%pi]])
}
```

1. Generate a random matrix B 10×10

```
\m{
kill(g,A);
g: lambda ([i, j], 1+random (10));
B:genmatrix(g,10,10);
B
}
```

Caching

The \m macro saves its computation context, globally.

You can reset the Maxima cache, putting the command:

```
\m{ kill(all); }
```

at the beginning of your file.

Windows Installing

This software is installed in the dir c:\maxima-tex

1. Install the required Windows apps: *python* and *MAXIMA*. Usually, *MAXIMA* is installed in the directory c:\maxima-VERSION, for example c:\maxima-5.47.0

2. Unpack the ZIP package in the *mandatory* directory c:\maxima-tex
3. Enter in the directory and run the installer:

```
cd  c:\\maxima-tex
python .\setup.win
```

Linux Installing

This software is installed in the dir /home/USERNAME/maxima-tex, where USERNAME is the user's Linux account name.

1. Install the required pachage: *python* and *MAXIMA*.
2. Unpack the ZIP package in the directory /home/USERNAME/maxima-tex, where USERNAME is the user's Linux account name.

Latex setup

For the trick to work, you need to add the following line in your Latex preamble:

a. In Windows:

```
\input{c://maxima-tex/maxima.tex}
```

b. In Linux:

```
\input{/home/USERNAME/maxima-tex/maxima.tex}
```

Lyx and TeXStudio

This software is tested with Lyx and TexStudio, but should work with any other TeX typesetting system.

Normally, these software use the **pdflatex** command to produce the PDF. For the macro to work, you need to add a special switch, that enable the external execution program's flag:

1. In Windows:

```
--enable-write18
```

2. In Linux the

```
-shell-escape
```

Test with

1. In Linux: Maxima 5.45.1, Lyx 2.3.7-1, texstudio 4.3.1+ds-2
2. In Windows 11: Maxima 5.47, Lyx 2.3.7

Screenshots

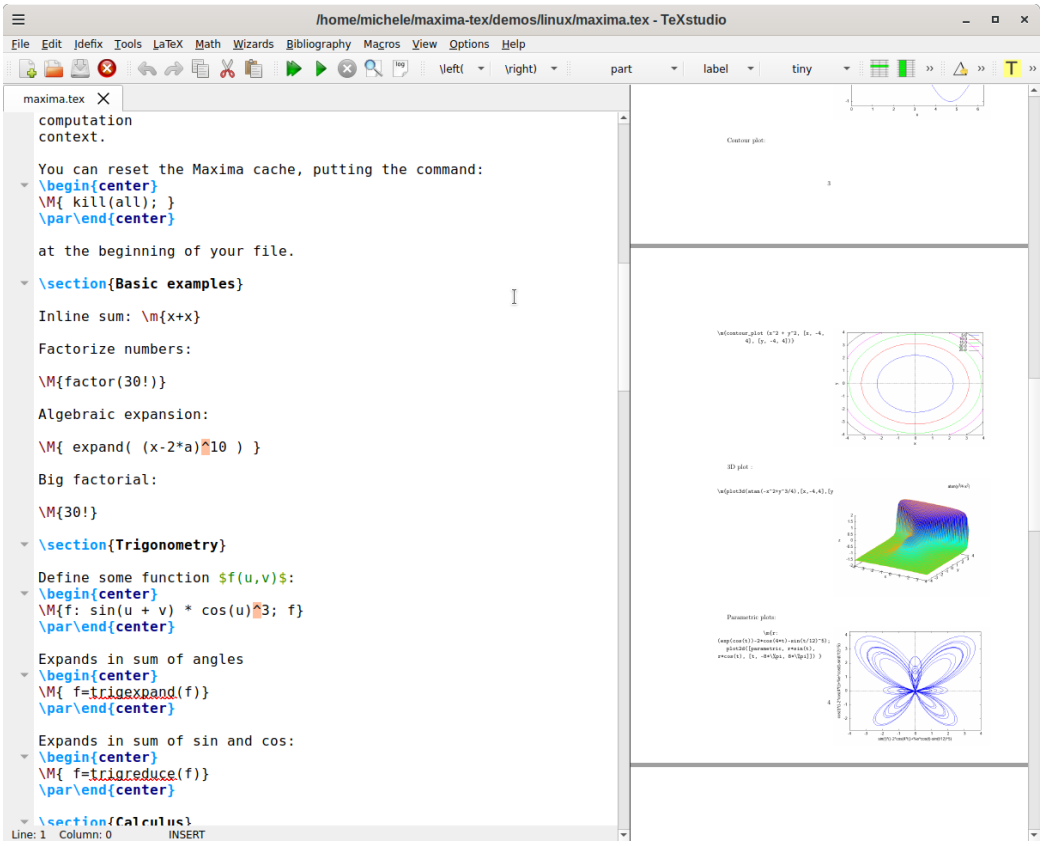

Figure 2: TeXStudio

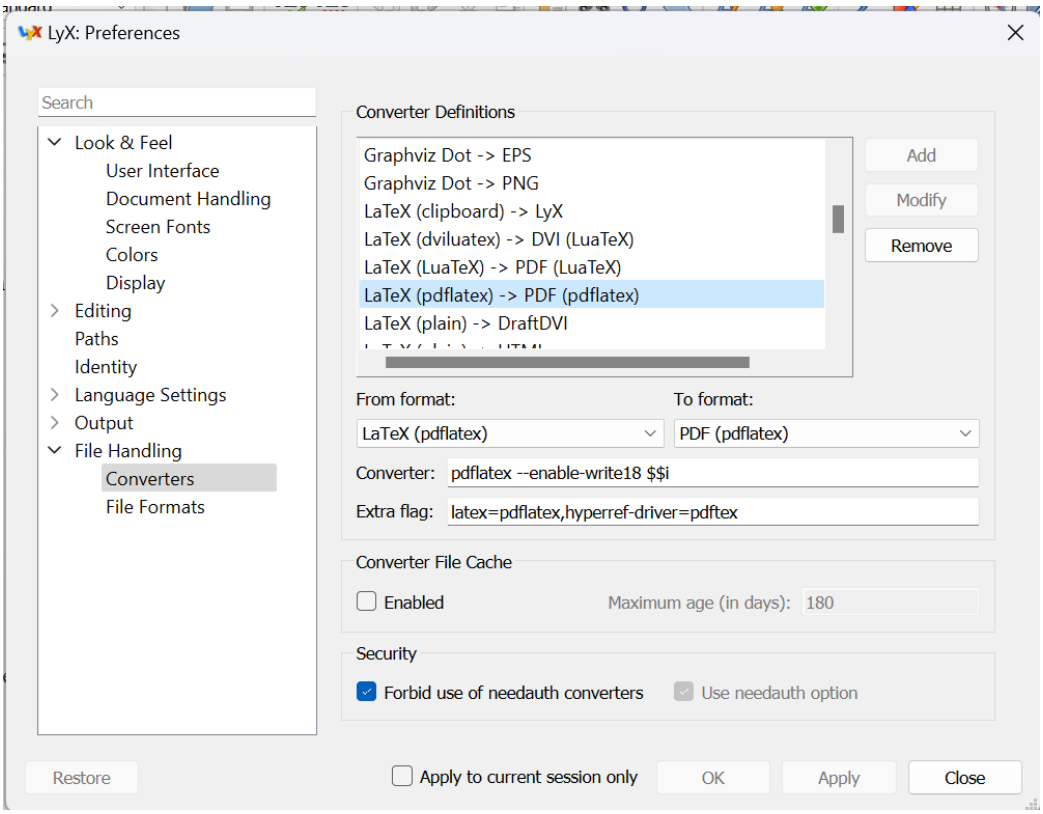

Figure 3: win setup