

Maxima Presentation

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Maxima is a CAS (Computer Algebra System) that has the ability to perform many complex functions; such as systems of linear equations, polynomials, vectors, matrices and plotting in both 2d and 3d. During our research into Maxima we felt that it was comparable to Mathematica but as we read reviews it became clear that if you do not consider the fact that Maxima is **FREE** then yes Mathematica is by far the better program.

Using Maxima as a calculator is simple as it can easily solve many problems. But remember to have Maxima solve any problem you need to make sure to have ; at the end of the code and then press shift enter. An example of Maxima as a calculator for simple math:

```
(%i16) 3+4;
```

```
(%o16) 7
```

if you use the percent sign it will use the previous answer with your next command.

```
(%i17) %^2;
```

```
(%o17) 49
```

You can also assign values to variables by simply entering the variable and then telling it what you wish it to be by using the colon and then ending the command with ;. This process can also be used when evaluating functions. (you can also get the code for problems that you enter into Maxima to save time with creating your Latex documents)

```
(%i1) f(x):=(x)/(1+x^2);
```

```
(%o1) f(x) :=  $\frac{x}{1+x^2}$ 
```

$$f(x) := \frac{x}{1+x^2}$$

```
(%i20) p:7;
      q:3;
```

```
      p+q;
```

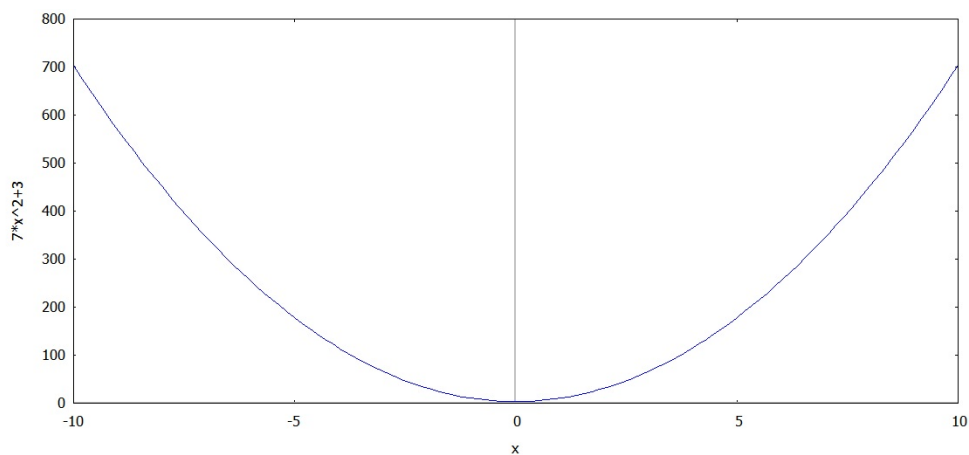
```
(%o20) 7
```

```
(%o21) 3
```

```
(%o22) 10
```

Plotting is very similar Mathematica because of this it is important to define the range of your Variables.

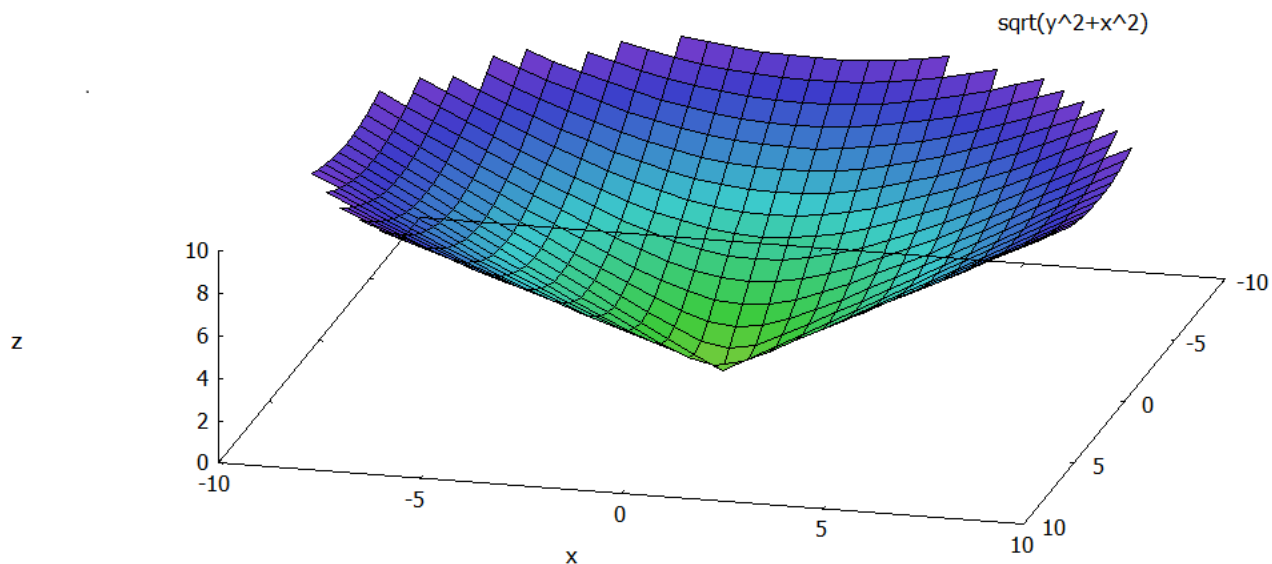
```
(%i26) plot2d((p*x^2+q),[x,-10,10]);
```



Graphing in Maxima much like with other CAS systems requires an understanding of the mathematics that is used to create the graphs. It is a very simple system and the amount of information on line helps greatly when researching.

Creating a cone with Maxima is as simple as with Mathematica.

```
(%i6) plot3d(sqrt(x^2+y^2), [x,-10,10], [y,-10,10], [z,0,10]);
```



Resources

You can download Maxima free to your computer by the following web site. The site also has a great deal of information to help you get started.
<http://wxmaxima.sourceforge.net>

<http://hughesbennett.co.uk/PlottingIn3DWithMaxima>