TeXmacs Octave Plugins

i. octave/octave/tm/tmrepl.m: change & to && in line 28;

ii. remove all the file in octave/octave/plot and add a new file, show.m, to print out the plot;

iii. modify .octaverc to add the octave library path.

ToDo's:

**Check it for old Octave 2.x (but I has no the old version)

Requirement:

maybe transfig (fig2dev), epstool, xfig needed (I has not checked it).

Examples (for Octave 3.6.4, TeXmacs-1.0.7.19 on live USB Porteus x64 Linux system)

1. Partition [10,-10] into 1000 non-overlapping intervals:

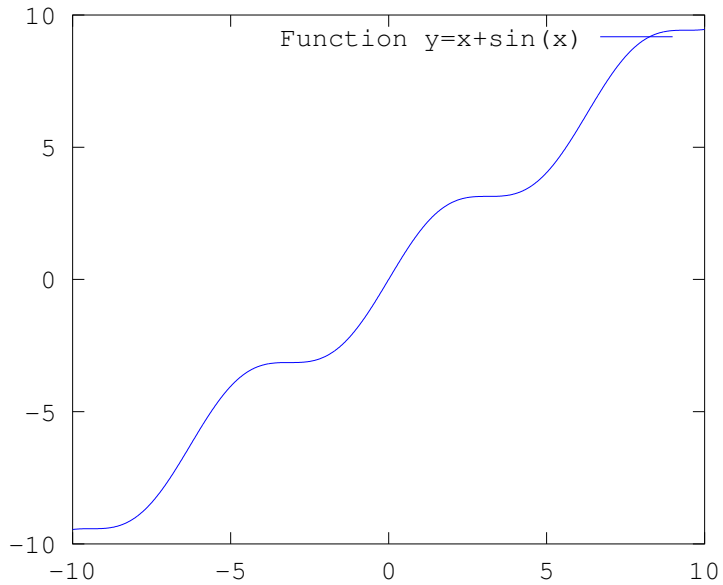
```
octave> x=linspace(-10,10,1000);
```

2. define the function, $y(x) = x + \sin x$

```
octave> y=x+sin(x);
```

3. plot

```
octave> plot(x,y,";Function y=x+sin(x);");
octave> show()
```



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```
octave> z=x+cos(x);hold on
```

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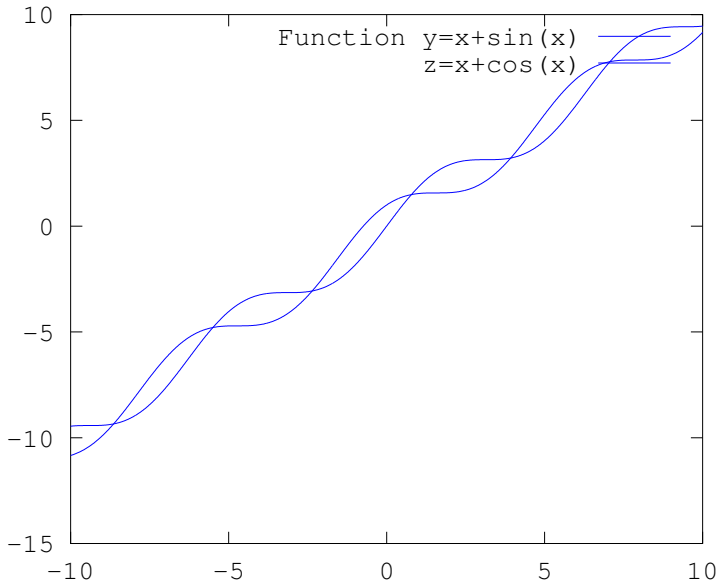
```
octave> plot(x,z,";z=x+cos(x);");
octave> show
```




```
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```

```
octave>
```

One of the powers of Octave is modeling and simulations. The following example is to simulate the system of ODEs (Ordinary Differential Equation):

$$\begin{aligned}
\frac{dx_1(t)}{dt} &= -10(x_1(t) - x_2(t)) \\
\frac{dx_2(t)}{dt} &= 28x_1(t) - x_2(t) - x_1(t)x_3(t) \\
\frac{dx_3(t)}{dt} &= \frac{8}{3}\,(\,x_1(t)x_2(t) - x_3(t)\,) \\
\text{Initial condition:} \quad & x_1(0) = 2, x_2(0) = 5, x_3(0) = 10
\end{aligned}$$

and output the resulted in postscript format:

Initial condition:

```
octave>  x0=[2;5;10];
octave> t = linspace (0,10,800);
```

The Differential Equations

```
octave> function dx = butter (x ,t)
           dx(1) = -10.0*(x(1)-x(2));
           dx(2) = 28.0*x(1)-x(2)-x(1)*x(3);
           dx(3) = 8.0/3.0*( x(1)*x(2) -x(3) );
        end;
```

Solve the DE numerically

```
octave> y=lsode("butter",x0,t);
```

Show the the result and print within TEXMACS

```
octave> plot3(y(:,1),y(:,2),y(:,3))
```

```
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```
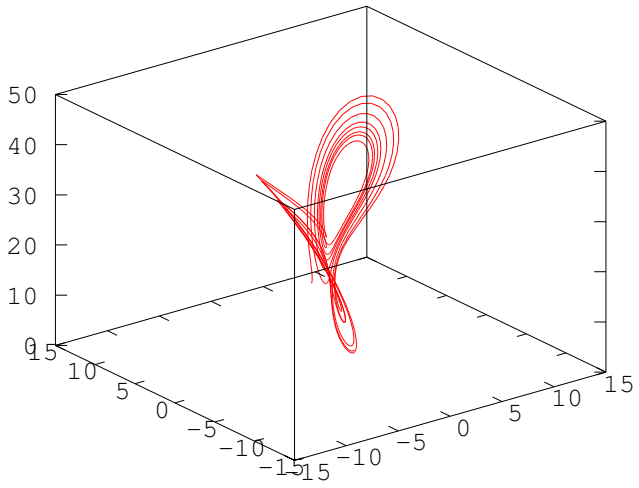

```
octave> show
```




```
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octave>
```