

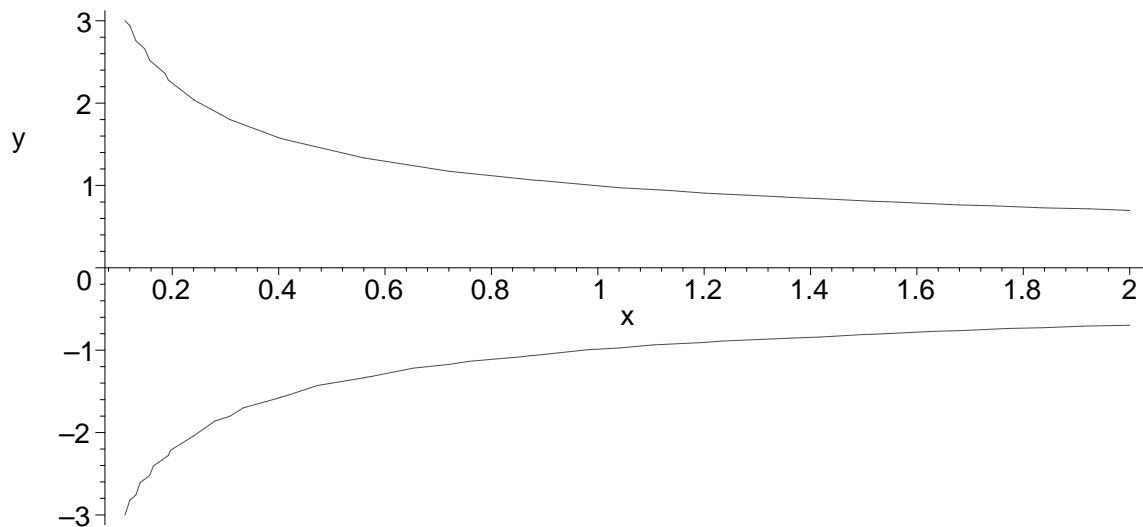
Maple and Implicit Plots and Tangent Lines

Maple can do implicit plots, but it doesn't have the ability to do them loaded into its brain by default. So the first thing one needs to do is to tell Maple to get ready to do some non-standard plots. This is done with the following command:

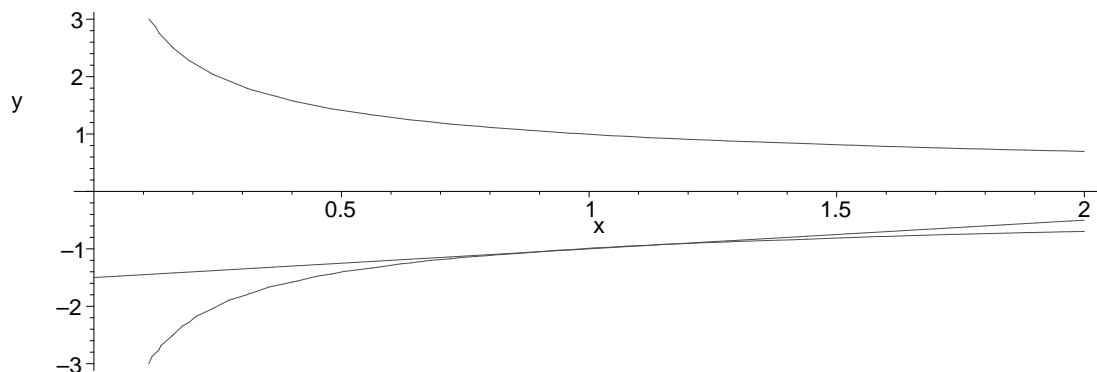
```
> with(plots);
```

```
[animate, animate3d, animatecurve, arrow, changecoords, complexplot, complexplot3d, conformal, conformal3d, contourplot, contourplot3d, coordplot, coordplot3d, cylinderplot, densityplot, display, display3d, fieldplot, fieldplot3d, gradplot, gradplot3d, graphplot3d, implicitplot, implicitplot3d, inequal, interactive, listcontplot, listcontplot3d, listdensityplot, listplot, listplot3d, loglogplot, logplot, matrixplot, odeplot, pareto, plotcompare, pointplot, pointplot3d, polarplot, polygonplot, polygonplot3d, polyhedra_supported, polyhedraplot, replot, rootlocus, semilogplot, setoptions, setoptions3d, spacecurve, sparsematrixplot, sphereplot, surfdata, textplot, textplot3d, tubeplot]
```

```
> implicitplot(x*y^2=1, x=-2..2, y=-3..3);
```

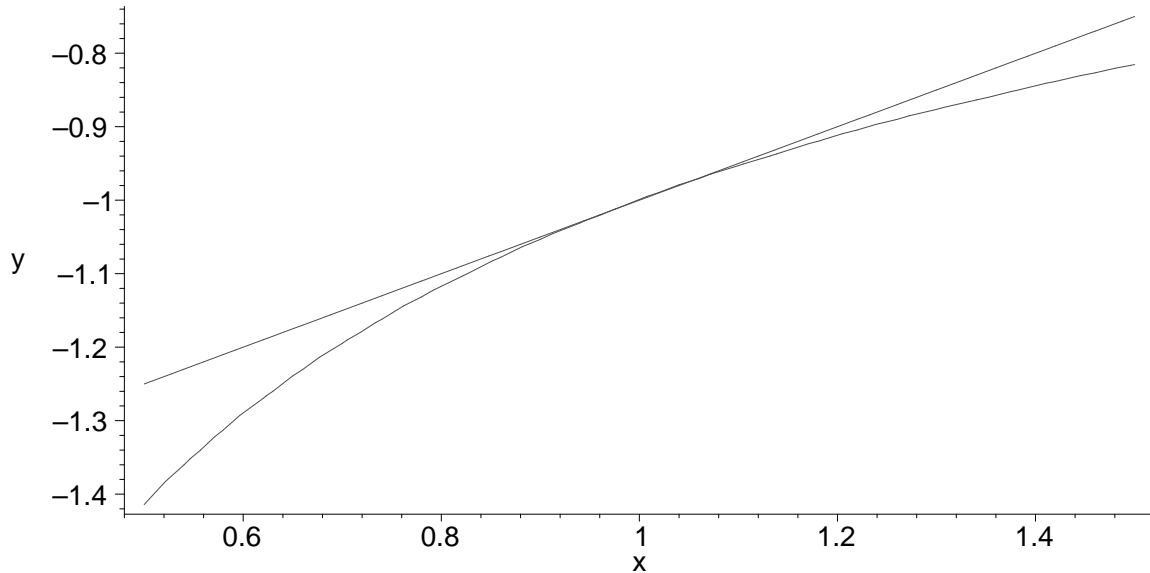


```
> implicitplot( { x*y^2=1, y=(1/2)*x - (3/2) }, x=0..2, y=-3..3);
```

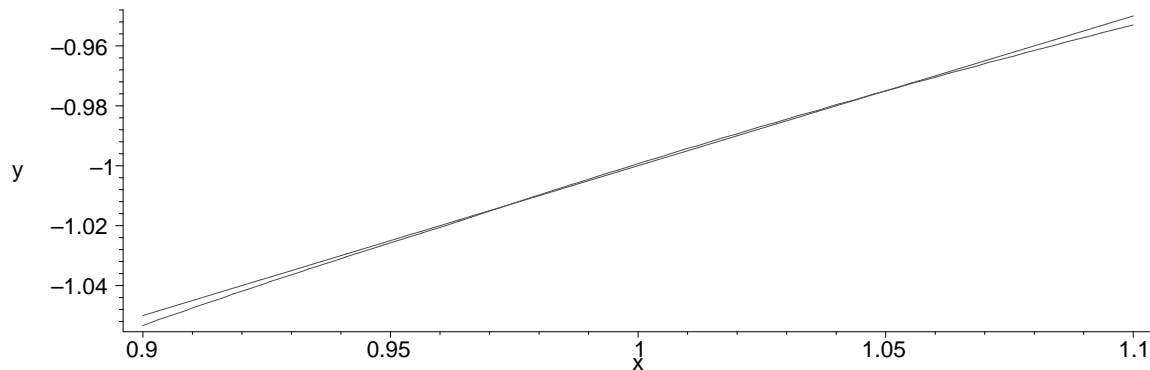


The last plot on the previous page shows the function and the tangent line. In the next two plots, we zoom in on the tangent line. Note that eventually, as we zoom in more and more, the function and the tangent line are essentially indistinguishable.

```
> implicitplot( { x*y*y=1, y=(1/2)*x - (3/2) },  
  x=0.5..1.5,y=-1.5..0.5);
```



```
> implicitplot( { x*y^2=1, y=(1/2)*x - (3/2) },  
  x=0.9..1.1,y=-1.1..0.9);
```



```
> implicitplot( { y=-1/sqrt(x), y=(1/2)*x - (3/2) },  
  x=0.99..1.01,y=-1.01..0.99);
```

