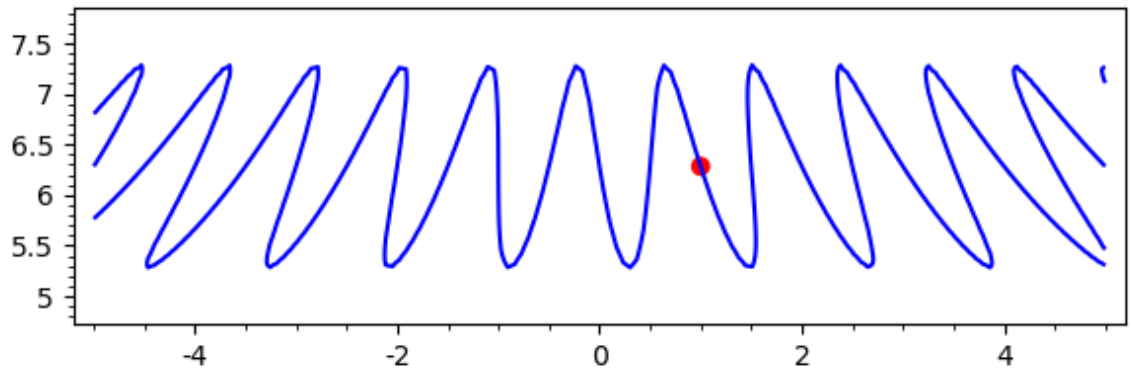
In [1]:

```
var('x,y')
implicit_plot(y+sin(x*y) == 2*pi, (x,-5,5), (y,2*pi-1.5,2*pi+1.5)) + point((1,
2*pi), rgbcolor='red', pointsize=50)
```

Out[1]:



In [2]:

```
y=function('y')(x)
dydx(x)=solve(derivative(y+sin(x*y) == 2*pi,x),derivative(y,x))
show(dydx)
```

Out[2]:

$$x \mapsto \left(\frac{\partial}{\partial x} y(x) = -\frac{\cos(x\,y(x))\,y(x)}{x\cos(x\,y(x)) + 1}\right)$$

In [3]:

```
# evaluate the value at x=1
show(dydx(1))
```

Out[3]:

$$\left(\mathrm{D}_0(y)(1) = -\frac{\cos(y(1))\,y(1)}{\cos(y(1)) + 1}\right)$$

In [4]:

```
# given that y(1)=2*pi, we put it in the expression
show(-cos(2*pi)*2*pi/(cos(2*pi) + 1))
```

Out[4]:

$$-\pi$$

In [0]:

```

```