Code cells show code input and output:

In [1]:
```
1 + 2
```

Out[1]:
```
3
```

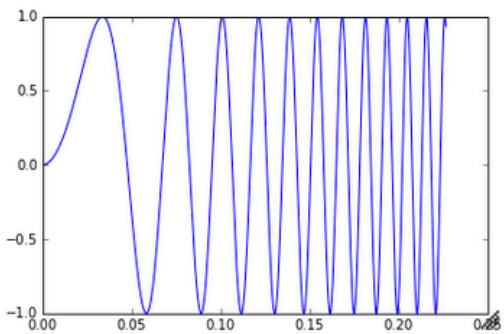
Cells can contain text and latex equations such as $f(x) = \sin(2\pi\omega t^2)$ and $\omega = 220$ Hz. We can use code to define the corresponding functions:

In [2]:
```
import numpy as np
def f(t):
    omega = 220
    return np.sin(2 * np.pi * omega * t**2)
```

Let's compute the data and plot the beginning of it:

In [3]:
```
t = np.linspace(0, 2, 44100)
y = f(t)
## Show plots inside the notebook
%matplotlib inline
import pylab
pylab.plot(t[0:5000], y[0:5000])
```

Out[3]:
```
[<matplotlib.lines.Line2D at 0x108425ad0>]
```



We can integrate media: images, videos, interactive elements and sound:

In [4]:
```
from IPython.display import Audio
Audio(y, rate=44100)    # plays the data in y as audible
```

Out[4]:

We can connect other languages and tools, for example execution in bash:

In [5]:
```
%%bash
echo "Some shell command, run at `date`"
```

```
Some shell command, run at Mon 12 Jan 2015 11:38:40 GMT
```