MTK Basic Test 01 - Sage Integration

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1 Test sageblock

This section tests the ability to run Python inline using the sageblock command. The sageblock command shows the Python code in the resulting document and makes the results of the Python analysis available for later reference as shown below.

```
x1 = 1
x2 = 1
y = x1 + x2
```

The above code demonstrates that $1 + 1 = 2$.

2 Test sagesilent

This section tests the ability to run Python inline using the sagesilent command. The sagesilent command runs the Python code without displaying the source in the resulting document and makes the results of the Python analysis available for later reference as shown below.

The hidden code demonstrates that $2 + 2 = 4$.

3 Test PyLab Integration and Plotting

This section tests the ability to use PyLab's plotting methods to create a basic plot and then include it in the document.

```
import numpy
import pylab

range_begin = -5
range_end = 5
x_vals = []
y_vals = []
```

```
# define the function to evaluate
y = x^2 +2*x + 3

# add 1 to range end to include the last desired value
for i in range (range_begin, range_end+1):
  x_vals.append(i)
  y_vals.append(y(x=i))

x_arr = numpy.array(x_vals)
y_arr = numpy.array(y_vals)

pylab.clf()
pylab.plot(x_arr, y_arr, 'bo')
pylab.xlabel('x')
pylab.ylabel('y')
pylab.title('Demonstration Quadratic Plot')
pylab.savefig('quadratic.png')
```

The code above calculates values for the quadratic equations $x^2 + 2\,x + 3$ for the integer values from -5 to 5 and plots these values in a newly generated file quadratic.png. The LaTeX code then conditionally includes the plot as Figure 1.

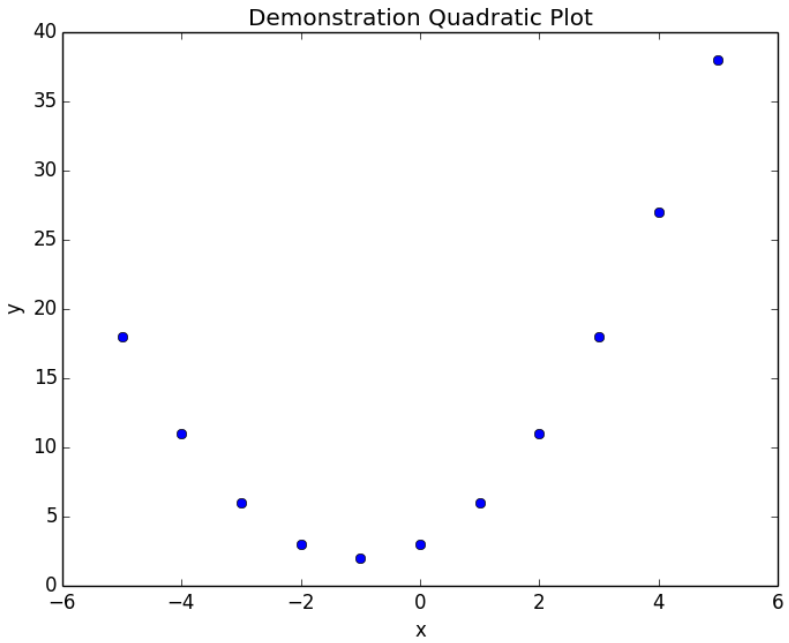

Figure 1: Including a Sage generated plot