Exercise 4: Using a Python Module

In this exercise you will write your answers in MS word. Name your file as "**exercise4.docx**"

One of the more important Python library modules is the math module. It contains essential mathematical functions like sin and cos. It also contains mathematical constants such as π. These values are stored in global variables; global variables are variables in a module (created via an assignment statement) that are not part of any function. To learn more about this module, look at its online documentation:

http://docs.python.org/library/math.html

To use a module, you must **import it.** Type the following into the Python interactive mode:

```
import math
```

You can now access all of the functions and global variables in math. However, they are still in the math `namespace`. That means that in order to use any of them, you have to put "math." before the function or variable name. For example, to access the variable pi, you must type `math.pi`.

Expression	Expected Value	Calculated Value	Reason for calculated value
Math.sqrt(9)	3	3.0	
Math.sqrt(-9)	3*i* , -3*i*	ValueError	The sqrt does not compute values for complex numbers.
Math.floor(3.7)	3	3.0	
Math.ceil(3.7)	4	4.0	
Math.ceil(-3.7)	-3	-3.0	
Math.copysign(2, -3.7)	-2	-2.0	
Math.trunc(3.7)	3	3	
Math.trunc(-3.7)	-3	-3	
Math.pi	3.141592653	3.141592653589793	
Math.cos(math.pi)	-1	-1	

In addition to the above expressions, type the following code into the Python interactive mode:

```
math.pi = 3
math.pi
```

What happens and why?
It outputs 3 because pi is a math constant stored as a global variable so it changed to 3 upon assignment i.e math.pi = 3