## **Activities: Python Functions**

- 1. Import the math module and calculate the value of  $sin(x)^2 + cos(x)^2$  for x = math.pi. (This is a joke, but do you get it?)
- 2. Import the math module in order to make a primitive table of the values of the sine and exponential of the number 0, 0.1, 0,2, ... 1.8, 1.9, 2.0. You can use a for loop to generate the arguments as multiples of 0.1.
- 3. Write a function that calculates and returns the value  $\frac{|x + y|}{x^2 + y^2 + 1}$ . The function needs to return a value, not print it. (Printing and returning are two very different things, unfortunately, right now they appear to do almost the same thing. Then check your function against mine:  $f(-2,3) = \frac{1}{14}$ ,  $f(-1,3) = \frac{2}{11}$ ,  $f(0,1) = \frac{1}{2}$
- 4. Write a function that prints *n* asterisks, then m spaces, then *n* asterisks. This function could have a return statement or not.
- 5. Write a function that given *x* returns the value *n* such that the *n*th harmonic number is just above *x*. (Of course, you are to use the code from the previous module.
- 6. Write a function that prints out a rhombus of 2*n*-1 lines as on the right.
- 7. Write a function get\_user\_consent(). This function asks the user for consent. If the user enters "yes", "aye", "Yes", "Yupp" or any other word that starts with "y", then the function returns True. You check whether the first letter of a word is "y" by the following if-statement:

if word[0] == 'y':
DoSomething

Otherwise, the function will return "False".

