Episode 4 Homework

1.Write a program that
   1. Creates a list of temperature from 0 through 60 by 10 using a loop rather than by typing in all the values.
   2. As each degree C value is added, converts it to F and adds the F value to a list for the Fahrenheit equivalents.
   3. Makes another loop which prints out C and F both on the same line, but does it by indexing into the two lists.

2. Write a program that evaluates the function

$$f(x) = \frac{1}{\pi(1 + x^2)}$$

For 401 values of x equally spaced between -4.0 and 4.0 *inclusive*. Use lists and one or two `for` loops to accomplish this. Use matplotlib to plot the function. Use variables to specify the starting and ending values of x and the number of values, rather than typing in the numbers directly. Represent the function values with a list called y.

To obtain pi, at the top of your program after the docstring add
import math

Then math.pi is the value of π

Hints: start with
N=401
x0=-4.0
xend=4.0
x=[0.]*N
Then if you compute the increment correctly you will be able to use a statement in your loop like
x[i]=x0+incr*i

 For plotting recall that you will need to add a line at the top

Import matplotlib.pyplot as plt

Then once you have a list of x values and a corresponding list of y values, use
plt.plot(x,y)
to make the plot. If you are using an iPython console you should see the plot; otherwise use
plt.show()
to display it in a separate window.