Python - Some Basics

Python is a computer programming language that is used heavily in scientific and engineering situations. Perform the following tasks to familiarize yourself with some basic skills in python.

1. **(Simple Math Calculations)** Perform the following calcuations in python. See section 5.1 in the python book for help with performing simple calculations. Verify that they are correct by comparing with a friend and/or using a calculator that you are familiar with:
   a) $5\cos^2(23°) + \exp(10)$
   b) $5\sqrt(50) + 67^{\frac{2}{3}}$
   c) $5\cosh(20°) + 8\sinh(9°)$
2. **(Math Calculations involving bigger data sets.)** Read section 5.3 in the python book about arrays. Then perform the following:
   a) Create the following arrays, assigning them to the variable name indicated:
      - `x0 : [5,5.2,4.8,4.5,5.9,5.5,3.9,4.7,4.75,5.12]`
      - `v0 : [32,31.5,33.2,34.5,32.2,30.8,31.7,32.4,34.4,31.6]`
      - `a : [-9.45,-9.2,-8.8,-10.5,-7.9,-8.5,-9.9,-10.7,-10.75,-7.12]`
   b) Now calculate the quantities: $x_f = x_0 + v_0 t + \frac{1}{2}at^2$ where $t = 10$ s. There should be 10 values for x_f since there were 10 values for x_0, v_0 and a.
3. Choose a problem from your math class (preferrable a more lengthy one) and use variables to perfrom the calculations.