HW 03 - turn in one week from today in Canvas

Turn in the 5 questions as a single .py file onto canvas. Use comments to clearly indicate which question you are working on. Your filename should end as _py2.py if you use Python2 and _py3.py if you use Python3.

1. Open an Anaconda/Canopy prompt/terminal. Enter the command *pip install pydoe* or (*conda install pydoe* if you've installed anaconda) to install the pydoe package. This is a Python Design of Experiments library. In your .py file import pyDOE.
2. Use the os library to print the current Python working directory. It is very useful to run system commands using os.system(). Import os. Run a system command to use the system's *ping* program. If you are using Windows run the command *ping -n 2 ufl.edu* or if you are using Linux/OS *ping -c 2 ufl.edu*. Hint: your command should be a string in Python.
3. Compare math.pi to numpy.pi. Are these two representations of π equivalent? Print the boolean statement True if they are, otherwise print False.

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4. Create a class called sphere. The object sphere requires a radius and mass to initialize. The attributes of the sphere should include the radius (r), mass (m), volume (v), surface area (A), and density (ρ). Initiate a new sphere name red with $r = 1.7$ and $m = 0.25$. Print dir(red). Print the volume, surface area, and density of red.

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5. The Python 3 print function adds some incredibly useful functionality

   ```
   x = 1.0; y = 2.0;
   print(x,y,sep = ' & ')
   ```

   will print *1.0 & 2.0*

   Given x

   ```
   x =   [[ 0,  1,  2,  3],[ 4,  5,  6,  7],
   [ 8,  9, 10, 11],[12, 13, 14, 15]]
   ```

   Use a for loop to iterate through the four lists in x. Each item in the list should be printed and separated by an &. The following should be the output of your print.

   0 & 1 & 2 & 3

   4 & 5 & 6 & 7

   8 & 9 & 10 & 11

   12 & 13 & 14 & 15

Hint: From __future__ should go at the top of your script if you are using Python 2.