HOMEWORK 1

(1) Install and run Matlab. Create a script named `HW1_FirstName_LastName.m`, in which you will put your Matlab code to perform the following listed tasks. Place comments to separate each problem and sub-problem.

For this, and all future homeworks, submit all relevant or necessary files to me through email: bruney@live.unc.edu with th subject: LASTNAME.MATH383.FA22

(2) Scalar variables in MATLAB:

    (a) Create $x = 36.0$.

    (b) Create $y = 2.7 \times 10^3$.

    (c) Create $z = (\sqrt{x} + y^{-1/3})^\pi$.

    (d) Create $w = \sin\left(\log\left(z\right)\right)$.

(3) Vector variables in MATLAB:

For all parts, create the variable *without* explicitly typing in its values.

    (a) Create the 201-element array $x = .1[-100 \ -99 \ \ldots \ 99 \ 100]$

    (b) Create and display the 5-element array $y = [10^{-2} \ 10^{-1} \ 10^0 \ 10^1 \ 10^2]$.

    (c) Create and display the 9-element array $\vec{z} = \left[e^{-i\pi} \ e^{-i3\pi/4} \ e^{-i\pi/2} \ e^{-i\pi/4} \ e^0 \ e^{i\pi/4} \ e^{i\pi/2} \ e^{i3\pi/4} e^{i\pi}\right]$. Note: i and π can be represented in Matlab using `i` and `pi`, but this is *not* true for e.

    (d) Create the vector with pointwise components
$$b_i = 1 + \sin(x_i)$$

    (e) Plot $\vec{b}$ (on the horizontal axis) versus $\vec{x}$ (on the vertical axis)

(4) Errors in Matlab. In a separate .txt file, provide a written answer to the following question:

Consider the following statement in Matlab:

`5=x`

Explain, in a sentence or two, the error the results (including why the statement doesn't make sense to the Matlab interpreter), and propose a correction to cause the statement to do what you think the intended purpose was.