HOMEWORK # 1

CS 20600 – DUE FRIDAY 09/01/2023

- Start MATLAB. Then type `diary name_hw1.txt` and hit return.
  OR Open a new M-file `namehw1.m`.
- Use `format compact` for this homework.
- State your name and homework assignment. Insert comments to explain which exercise you are working on.
- Do the following:

Exercise I. (13 points) Name differently all the variables you create (use the indicated name, if given).

(1) Create a variable named `a_1` and assign the value π^2 to it.
(2) Use the `abs` command to find the absolute value of -32.
(3) Compute the logarithm to the base 2 of the variable you created in part (2).
(4) Use the `sin` command to find the sine of 90 degrees.
(5) Use the `cos` command to find the cosine of 270 degrees.
(6) Write a script that assigns the cosine of $\pi/3$ to a variable and then squares that variable.
(7) Evaluate the expression $\sqrt{8^2 + 6^2}$.
(8) Evaluate the expression $100 \cdot \dfrac{10 + 20}{10 \cdot 20}$.
(9) Create a variable `r` and assign the value $1/\pi$ to it. Then compute $2\pi r$.
(10) Compute the natural logarithm of 27.
(11) Compute the logarithm to the base 3 of 729.
(12) Evaluate $\sqrt{(e^{-3})}$.
(13) Save all the variables you created in a file named `param_I`.

Exercise II. (7 points)

(1) Create an inline function for $g(a, b) = e^{-a} + \sqrt{b^2 + 1}$.
(2) Use your inline function to evaluate $g(0, 0)$ and $g(-1, 4)$.
(3) Erase the inline function you created for g.
(4) Create an inline function $f(x) = x^2 + x + 1$.
(5) Use your inline function to evaluate $f(0), f(1)$, and $f(-1)$.
(6) Create an inline function named `h` to compute $\dfrac{1}{f(x)}$.
(7) Evaluate `h` at $x = -3$.

Exercise III. (6 points)

(1) Construct the function $f(t) = (t + 1)^2 - \ln(4t^2 + 2t + 1) + 5(t^2 + 1)$ and evaluate $f(0)$, using the three methods discussed in class.
(2) Construct the function $h(z, w) = 7\dfrac{2z - w}{z^2 + 2w^2}$ and evaluate $h(-1, 1)$, using the three methods discussed in class.

- Type `diary` and submit your files (`name_hw1.txt` and `param_I.mat`) via Brightspace to the correct assignment.
  OR Type `publish('namehw1','pdf')` and submit your file via Brightspace.