Homework #1

Scientific Computing (501125-2)

Spring 2021

Due: Saturday February 20, 2021, 11:59 pm via Blackboard

1) What is Matlab?
2) What are the five main parts of which the Matlab system consist?
3) What is the command that writes a message to the screen?
4) Define a variable named x and set it equal to one.
5) Define a variable y and Initialize its value to twice that of x
6) Increase the value of variable x by 1
7) Declare another variable z which is equal to 2 times the current value of x
8) What is the difference between the command who and the command whos?
9) How to use the command whos to get information about certain variables? For example, use the command whos to get more information about variables x and y.
10) What command can you use to get rid of a certain variable?
11) What is the benefit of using semicolon ; at the end of a command line in Matlab?

12) What command can we use to get rid of all of the variables at once?

13) Create a 3 by 2 array (matrix) of zeros. (Name the matrix by your_name such as Haifa)

14) Create the row vector of even numbers from 1 to 20, Use the colon operator.

15) Create a scalar of an odd number.

16) Create a 4 by 6 matrix M and fill it with the fol

```
M =
   9   9   8   7   1   2
   2   4   6   8  10  12
   1   3   5   7   9  11
   7   2   2   8   8  10
```

17) Set the 2 by 2 submatrix in the bottom left with ones then show M again on the screen.

18) Create a 4 by 6 matrix F

```
F =
   1   2   3   1   2   3
   4   5   6   4   5   6
  10  10  10  10  10  10
  -2  -8  -1   2   8   1
```

19) Add M to F.

20) Multiply matrix F with scalar 2 and print the answer (note that ans is the default in matlab).

21) Multiply matrix M with matrix F (i.e. M * F) and show the result if it works.

22) Multiply matrix each element of matrix M with the corresponding element in matrix F and show the

result. What did we call this type of multiplication

23) Delete the first four rows in matrix M.

24) Delete the last column in matrix F

25) Find the Transpose of matrix F

26) Create a vector named a and set its value to 100 200 300 400 500 600 700 800 900 1000. (note use the colon operator)

27) Print the fifth, sixth, and seventh elements of a via indexing matrix a with the colon operator.

28) Give an example to illustrate the difference between the linspace function and the colon operator.

29) A = [2; 7; 4] write this Matlab command in a different way.

30) Create a 4 by 3 matrix W and fill it with the fol

```
M =
12    71    44
1     5     65
6     5     4
2     5     62
```

31) Create a 4 by 3 matrix R and fill it with the fol

```
M =
3     2     43
11    4     65
21    65    7
21    23    9
```

32) What is the command you should use to horizontally join matrices W and R, respectively?

33) What is the command you should use to vertically join matrices W and R, respectively?

34) What is the result of using the command R(:)?

35) What is the result of using M(:,1:2:3)?

36) Create a 5 by 5 magic matric and named it MAG.

37) Find the sum of the rows, columns, main diagonal, and secondary diagonal. What do you observe?