

Homework #1

Scientific Computing (501125-2)

2022-2023 3rd Trimester

Due: Saturday April 8, 2023, 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 matrix and name it MAG.
- 37) Find the sum of the rows, columns, main diagonal, and secondary diagonal. What do you observe?