HW1 – CECS 463

Exercise 1 (Commenting and commands): Briefly comment every line of the following. Say what each line is doing and write down the outcome: [use no more than one line per MATLAB line]

```
a=zeros(1,5)
a=zeros(1,5);
b=ones(3,2)
c=size(a)
abs([-5.2 , 3])
floor(3.6)
d=[1:-3.5:-9]
e = d
f=d(2)
g=sin(pi/2)
h=exp(1.0)
K=[1.4, 2.3; 5.1, 7.8]
m=K(1,2)
n=K(:,2)
comp = 3+4i
real(comp)
imag(comp)
abs(comp)
angle(comp)
disp('haha, MATLAB is fun')
3^2
4==4
2==8
3~=5
x=[1:1:5]
y=[3 5 7 6 8]
figure
plot(x,y)
figure
stem(x,y)
figure
plot(x,y,'+r')
```

To Submit:

- **Submit:** All of the above commands with your comments.

Exercise 2 (Vector dimensions): Using MATLAB, generate the following discrete-time signals.

```
vect1 = [0 pi/4 2*pi/4 3*pi/4 4*pi/4 5*pi/4 6*pi/4 7*pi/4]
vect2 = cos(vect1)
```

This tells you that the input of many built-in functions can be vectors. Let `vect3` be the transpose of `vect1`. Generate `vect4 = cos(vect3)`.

To Submit:

- **Answer:** Is `vect4` the same as `vect2`?

- **Answer:** What happens when you compute `vect4 + vect2` using MATLAB? (Note the result has recently changed in recent versions of MATLAB)

Exercise 3 (Write a function #1): Here we will practice writing a simple function. Given a vector `input`, write a MATLAB function "`output = myConcat(input)`" that takes a **column vector** as the input and generates a **column vector** that is the concatenation of the input vector with itself. For example, if the input is `[5, 4, 3]'`, then output should be `[5, 4, 3, 5, 4, 3]'`. If the input is not of size $N \times 1$, then the function should display a message saying "This function works only for column vectors" and output -1 instead of a vector.

To Submit:

- **Submit:** The function code for `myConcat.m`.

- **Answer:** What is the output for input `[1:5]`?

- **Answer:** What is the output for input `[1:5]'`?

- **Answer:** What is the output for input `magic(5)`?

Exercise 4:

Problem P2.1 parts **1, 3, 5**   (**Page 53 in your Textbook**)