EE 3054: Signals, Systems, and Transforms

Matlab Quiz

No laptop, no notes, no documentation.

1. Given the following array `a`,

```
a =

    1    4    2    4
    7    5    9    2
   -5    7   -2    0
```

determine the result of each of the following commands.

```
>> a(2, 3)
>> a(2, :)
>> a(6)
>> a(3, 2:end)
>> a(1:2, 4:-1:2)
>> a([2 2], [2 3])
>> a > 5
>> sum(a)
>> a(:)
>> [a(1,:), a(2,:)]
>> [a(1,:); a(2,:)]
```

2. What are the results of the following commands?

```
>> a = [5 2 3 5 8];
>> b = [9 2 5 0 8];
>> a == 5
>> a == b
```

3. What is the result of each of the following commands?

```
>> a = [zeros(3); ones(1,3)]
>> b = [zeros(3); ones(3,1)]
```

4. What is the result of the following command?

```
>> n = 0:0.5:3.2
```

5. What is the result of the following commands?

```
>> n = 2:7
>> n(2) = [];
>> n
```

6. What are all the results of the following commands?

```
>> a = [3 4; 7 8];
>> b = [1 0; 0 1];
>> a'
>> a - 1
>> a .* b
>> a * b
>> a | b
>> a & b
>> a .^ 2
>> a ^ 2
```

7. The following code fragment produces 3 graphs. Sketch each of the three graphs.

```
>> n = 0:7;
>> x = 2*n + 1;
>> stem(n,x)
>> plot(n,x)
>> y = (-1).^n;
>> plot(n,x,n,y)
```

8. Sketch the 3 graphs produced by the following code.

```
>> n = 0:10;
>> x = (n >= 1) - (n >=5);
>> stem(n,x)
>> h = (n == 5);
>> y = conv(h,x);
>> stem(0:20,y)
>> z = conv(x,x);
>> stem(0:20,z)
```

9. Write a short Matlab code that will plot a sinusoid of frequency 50 Hz for 10 cycles.

10. The file kiwi.m contains the following:

```
y = 5;
x = 6;
z = x + y;
```

The file grape.m contains the following:

```
function z = grape(x,y)
z = x + y;
```

What is the result of the following commands?

```
>> clear
>> x = 2;
>> y = 5;
>> kiwi
>> z
```

What is the result of the following commands?

```
>> clear
>> x = 2;
>> y = 5;
>> z = grape(x,y);
>> z
```