EE 3054: Signals, Systems, and Transforms
Lab Quiz 1 — Spring 2005
No laptop, no notes, no documentation.

1. Given the following array `a`,

```
a =

     9     4     7     2
     1     6     3     5
     3    10     6     4
```

determine the result of each of the following commands.

```
>> a(2, 3)
>> a(0, 2)
>> a(5)
>> a'
>> a(:, [2 2 2])
>> a(1:2:end, 1:2:end)
>> a(end:-1:1, :)
>> max(a)
>> b = a; b([2 3],[1 4]) = [11 22; 33 44]; b
>> b = a; b(:,2) = []; b
>> log10([1 10 100 0.1])
```

2. What are the results of the following commands?

```
>> a = [9 4 7  2 8];
>> a(2)
>> a(1,2)
>> a(2,1)
>> a > 5
>> find(a > 5)
>> a * a
>> [a, a]
>> [M, k] = min(a); M, k
>> a(1:end-1)
>> a([1 1 1], :)
```

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

```
>> a = [1+j, 1+2*j, 3, 4, 5*j];
>> k = find(imag(a)==0);
>> a(k)
```

4. What is the result of the following commands?

```
>> a = [];
>> for k = 5:-1:2
       a = [a, k];
   end
>> a
```

5. What is the result of the following commands?

```
>> a = [-2 3];
>> b = [4 2 -1];
>> conv(a,b)
```

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

```
>> n = 2:0.5:4;
>> x = [3 1 2 0 3];
>> plot(n,x)
>> plot(x)
>> stem(n,x)
```

7. Write a MATLAB function called `over` that has one output and two inputs. The first input is a vector; the second input is a scalar. The output should be the sum of all those elements in the vector that exceed the scalar. For example,

```
>> over([5 1 3 6 9],4)
ans =
    20
```

because the elements in the vector that are greater than 4 are: 5, 6, and 9, so we have $5 + 6 + 9 = 20$.

Your program should not use a `for` or `while` loop and it should not use an `if` statement.