

201/212 Lab #1 Key

My comments are in blue. Enter vectors and matrices:

```
>> u=[2;-3]
```

u =

```
 2  
-3
```

```
>> v=[1;-4;2]
```

v =

```
 1  
-4  
 2
```

```
>> w=[7;5;1]
```

w =

```
 7  
 5  
 1
```

```
>> B=[1 0;3 4]
```

B =

```
 1  0  
 3  4
```

```
>> C=[4 -2 3;2 0 1;5 -1 1]
```

C =

```
 4 -2  3  
 2  0  1  
 5 -1  1
```

```
>> D=[1 2 0;-3 6 2;2 1 -1]
```

D =

```
 1  2  0  
-3  6  2  
 2  1 -1
```

1a.

```
>> v+w
```

```
ans =
```

```
8  
1  
3
```

1b.

```
>> 4*v-w
```

```
ans =
```

```
-3  
-21  
7
```

1c.

```
>> B*u
```

```
ans =
```

```
2  
-6
```

1d.

```
>> C*D
```

```
ans =
```

```
16 -1 -7  
4 5 -1  
10 5 -3
```

1.e

```
>> D*C
```

```
ans =
```

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

1g.

```
>> D\w
```

```
ans =
```

```
7.0000  
0.0000  
13.0000
```

1h.

```
>> B^4
```

```
ans =
```

```
    1    0  
   255   256
```

1i.

```
>> B*w
```

Error using *
Inner matrix dimensions must agree.

```
>> C*B
```

Error using *
Inner matrix dimensions must agree.

We get an error for these operations because the dimensions don't match. The operations are not defined.

2a.

```
>> D'
```

```
ans =
```

```
    1   -3    2  
    2    6    1  
    0    2   -1
```

2b.

```
>> dot(v,w)
```

```
ans =
```

```
-11
```

```
>> v'*w
```

```
ans =
```

```
-11
```

Note: the default dot product in MATLAB is complex. There is no difference here because we are using real numbers. However, when we are using variables, the transpose version will eliminate the messy conjugates of variables that MATLAB inserts.

3.

```
>> cross(v,w)
```

```
ans =
```

```
-14  
 13
```

>>