

Matlab Notes for Math 210 Homework 5

Print out the matrix you are working with and the QR factorization.

```
A=ones(4)-diag([1 -1 1],1)
```

```
A = 4x4
    1     0     1     1
    1     1     2     1
    1     1     1     0
    1     1     1     1
```

```
[Q,R]=qr(A)
```

```
Q = 4x4
   -0.5000    0.8660         0         0
   -0.5000   -0.2887    0.8165   -0.0000
   -0.5000   -0.2887   -0.4082   -0.7071
   -0.5000   -0.2887   -0.4082    0.7071
R = 4x4
   -2.0000   -1.5000   -2.5000   -1.5000
         0   -0.8660   -0.2887    0.2887
         0         0    0.8165    0.4082
         0         0         0    0.7071
```

To rescale each column of Q separately so that the entries are integers, I have to look at the columns and see if the entries are multiples of each other. In this case, I can divide each column by the fourth element in that column to obtain integer entries. Notice that dividing each entry of a column is done with the operation `./`, a period before the division sign.

```
for i=1:4
    I(:,i)=Q(:,i)./Q(4,i);
end
I
```

```
I = 4x4
    1.0000   -3.0000         0         0
    1.0000    1.0000   -2.0000   -0.0000
    1.0000    1.0000    1.0000   -1.0000
    1.0000    1.0000    1.0000    1.0000
```