Bruce Campbell OSU MATH 5603 HW #6

Problem 8

QR algorithm with Rayleigh quotient shift and deflation

```
clear all;
n=4;
A = rand(n);
A = A .* A';

niters = 4;

A_k = hess(A);

for k=1:niters
    %Rayleigh quotient shift
    rho = A_k(n,n)
    [Q_k R_k] = qr(A_k-rho* eye(n));
    A_k=R_k * Q_k +rho*R_k;
end %k
```

```
rho = 0.0177
rho = -0.0092
rho = -0.0614
rho = -0.0084
```

```
eig(A)
```

```
ans = 4×1
   -0.7161
   -0.0622
    0.2603
    1.4709
```

```
eig(A_k)
```

```
ans = 4×1
    1.6191
   -0.7079
    0.3433
   -0.0000
```