

```
A=[3 -2 0; -2 3 0; 0 0 5]
```

```
A = 3x3
     3    -2     0
    -2     3     0
     0     0     5
```

```
[v,d]=eig(A)
```

```
v = 3x3
    -0.7071   -0.7071     0
    -0.7071    0.7071     0
         0         0    1.0000
d = 3x3
    1.0000     0     0
         0    5.0000     0
         0     0    5.0000
```

```
%Property 1
```

```
B=10*A
```

```
B = 3x3
    30    -20     0
   -20     30     0
     0     0    50
```

```
[v,d]=eig(B)
```

```
v = 3x3
    -0.7071   -0.7071     0
    -0.7071    0.7071     0
         0         0    1.0000
d = 3x3
    10     0     0
     0    50     0
     0     0    50
```

```
%Property 2
```

```
C=A^2
```

```
C = 3x3
    13    -12     0
   -12     13     0
     0     0    25
```

```
[v,d]=eig(C)
```

```
v = 3x3
    -0.7071   -0.7071     0
    -0.7071    0.7071     0
         0         0    1.0000
d = 3x3
     1     0     0
     0    25     0
     0     0    25
```

```
%Property 3 A-kI has eig value lamba-k
```

```
k=2;
D=A-2*eye(3)
```

```
D = 3x3
     1    -2     0
    -2     1     0
     0     0     3
```

```
[v,d]=eig(D)
```

```
v = 3x3
   -0.7071   -0.7071     0
   -0.7071    0.7071     0
         0         0    1.0000

d = 3x3
    -1     0     0
     0     3     0
     0     0     3
```

```
%Property 4
E=inv(A)
```

```
E = 3x3
    0.6000    0.4000     0
    0.4000    0.6000     0
         0         0    0.2000
```

```
[v,d]=eig(E)
```

```
v = 3x3
   -0.7071     0    0.7071
    0.7071     0    0.7071
         0    1.0000     0

d = 3x3
    0.2000     0     0
         0    0.2000     0
         0     0    1.0000
```

```
%Property 5
F=A'
```

```
F = 3x3
     3    -2     0
    -2     3     0
     0     0     5
```

```
[v,d]=eig(F)
```

```
v = 3x3
   -0.7071   -0.7071     0
   -0.7071    0.7071     0
         0         0    1.0000

d = 3x3
    1.0000     0     0
         0    5.0000     0
         0     0    5.0000
```

```
%Property 6 eigen values of Hermitian matrices are real
```

```
%Property 7 eig val of real symmetric matrices are real  
%Property 7 eig val of real skew symmetric matrices eig val are purely  
%imaginary or 0
```