

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

```
A =
```

```
    3    0    0
   -2    3   -2
    2    0    5
```

```
>> [B,D]=eig(A)
```

```
B =
```

```
    0    0    0.7071
  1.0000 -0.7071    0
    0    0.7071 -0.7071
```

```
D =
```

```
    3    0    0
    0    5    0
    0    0    3
```

```
>> B(:,2:3)=sqrt(2)*B(:,2:3)
```

```
B =
```

```
    0    0    1
    1   -1    0
    0    1   -1
```

```
>> rank(B)
```

```
ans =
```

```
    3
```

```
>> Binv=inv(B)
```

```
Binv =
```

```
    1    1    1
    1    0    1
    1    0    0
```

```
>> Binv*A*B
```

```
ans =
```

```
    3    0    0
    0    5    0
    0    0    3
```

```
>> B*D*Binv
```

```
ans =
```

```
    3    0    0
   -2    3   -2
    2    0    5
```

```
>> A=[-1 1 1;1 -1 1;1 1 -1]
```

```
A =
```

```
   -1    1    1
    1   -1    1
    1    1   -1
```

```
>> [B,D]=eig(A)
```

```
B =
```

```
  -0.2895  -0.7634  0.5774
  -0.5164   0.6325  0.5774
   0.8059   0.1310  0.5774
```

```
>> D =
```

```
  -2.0000    0    0
    0  -2.0000    0
    0    0    1.0000
```

```
>> (B.').*B
```

```
ans =
```

```
    1.0000    0.0000    0.0000
    0.0000    1.0000    0.0000
    0.0000    0.0000    1.0000
```

```
>> Q=B;
```

```
>> (Q.').*A*Q
```

```
ans =
```

```
  -2.0000    0.0000    0.0000
    0.0000  -2.0000    0.0000
    0.0000    0.0000    1.0000
```

```
>> Q*D*(Q.')
```

```
ans =
```

```
  -1.0000    1.0000    1.0000
    1.0000  -1.0000    1.0000
    1.0000    1.0000  -1.0000
```