```
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```

```
%LU Factorization
A = [10 -7 0;-3 2 6;5 -1 5]
```

```
A = 3×3
    10    -7     0
    -3     2     6
     5    -1     5
```

```
[L,U] = lu(A)
```

```
L = 3×3
    1.0000         0         0
   -0.3000   -0.0400    1.0000
    0.5000    1.0000         0
U = 3×3
   10.0000   -7.0000         0
         0    2.5000    5.0000
         0         0    6.2000
```

```
%QR Factorization
[Q,R] = qr(A)
```

```
Q = 3×3
   -0.8639    0.4256   -0.2694
    0.2592   -0.0831   -0.9623
   -0.4319   -0.9011   -0.0385
R = 3×3
  -11.5758    6.9973   -0.6047
         0   -2.2444   -5.0042
         0         0   -5.9660
```

```
%Spectral Decomposition
B = [2 1;1 2]
```

```
B = 2×2
     2     1
     1     2
```

```
[U,D] = eig(B)
```

```
U = 2×2
   -0.7071    0.7071
    0.7071    0.7071
D = 2×2
     1     0
     0     3
```