Linear Algebra

In [1]:
```
import numpy as np
import pandas as pd
from numpy import linalg as lg
```

In [2]:
```
b=np.array([[1,2,3],[4,5,6],[7,8,9]])
print(b)
```

```
[[1 2 3]
 [4 5 6]
 [7 8 9]]
```

Rank

In [4]:
```
print(lg.matrix_rank(b))
```

```
2
```

Transpose

In [5]:
```
print(b.T)
```

```
[[1 4 7]
 [2 5 8]
 [3 6 9]]
```

Determinant

In [6]:
```
print(lg.det(b))
```

```
6.66133814775094e-16
```

Trace-Sum of diagonals

In [7]:
```
print(np.trace(b))
```

```
15
```

Inverse

In [8]:
```
print(lg.inv(b))
```

```
[[-4.50359963e+15  9.00719925e+15 -4.50359963e+15]
 [ 9.00719925e+15 -1.80143985e+16  9.00719925e+15]
```

```
[-4.50359963e+15  9.00719925e+15 -4.50359963e+15]]
```

Diagonals

In [10]:
```
print(np.diag(b))
```

```
[1 5 9]
```

eig

In [11]:
```
print(lg.eig(b))
```

```
(array([ 1.61168440e+01, -1.11684397e+00, -4.22209278e-16]), array([[-0.23197069, -0.785
83024,  0.40824829],
       [-0.52532209, -0.08675134, -0.81649658],
       [-0.8186735 ,  0.61232756,  0.40824829]]))
```

In [12]:
```
x,y=lg.eig(b)
print(x)
print(y)
```

```
[ 1.61168440e+01 -1.11684397e+00 -4.22209278e-16]
[[-0.23197069 -0.78583024  0.40824829]
 [-0.52532209 -0.08675134 -0.81649658]
 [-0.8186735   0.61232756  0.40824829]]
```

eigvals

In [13]:
```
print(lg.eigvals(b))
```

```
[ 1.61168440e+01 -1.11684397e+00 -4.22209278e-16]
```

A power 3 matrix

In [14]:
```
print(lg.matrix_power(b,3))
```

```
[[ 468  576  684]
 [1062 1305 1548]
 [1656 2034 2412]]
```

In [ ]:
```

```