In [49]:

```
import numpy as np
```

In [50]:

```
def FindEVs( matrix ) :

    print( f"matrix : \n{ matrix }\n" )
    eigvals = np.linalg.eig( matrix )

    print(f" EigenValues : \n{ eigvals[0] } \n")
    print(f" EigenVecs : \n{ eigvals[1] } ")
```

In [51]:

```
matrix = np.array( [
    [0 , 5 ,-10] ,
    [0 ,22 , 16] ,
    [0 ,-9 ,-2 ]

] )

immatrix = np.array( [
    [3 , -2] ,
    [4 ,  1]
] )
```

In [ ]:

```
eigvals = np.linalg.eig( matrix )
```

In [53]:

```
FindEVs( matrix )
```

```
matrix :
[[  0   5 -10]
 [  0  22  16]
 [  0  -9  -2]]

 EigenValues :
[ 0. 10. 10.]

 EigenVecs :
[[ 1.          0.70710678 -0.70710678]
 [ 0.          0.56568542 -0.56568542]
 [ 0.         -0.42426407  0.42426407]]
```

In [54]:

```
FindEVs( immatrix )
```

```
matrix :
[[ 3 -2]
 [ 4  1]]

 EigenValues :
[2.+2.64575131j 2.-2.64575131j]

 EigenVecs :
[[0.20412415+0.54006172j 0.20412415-0.54006172j]
 [0.81649658+0.j         0.81649658-0.j        ]]
```

In [80]:

```
sksm = np.array([
    [  0, -2,  45] ,
```

```
    [  2,  0,  4 ] ,
    [-45, -4 , 0 ]
])
```

In [81]:

```
FindEVs( sksm )
```

```
matrix :
[[  0.     -2.     45.   ]
 [  2.      0.      4.401]
 [-45.     -4.401   0.   ]]

 EigenValues :
[-2.22044605e-16+45.25890853j -2.22044605e-16-45.25890853j
 -1.92118976e-16 +0.j        ]

 EigenVecs :
[[ 0.00304146-0.70374917j  0.00304146+0.70374917j -0.09724052+0.j        ]
 [-0.03109881-0.06882667j -0.03109881+0.06882667j  0.99427939+0.j        ]
 [ 0.70641603+0.j          0.70641603-0.j          0.0441902 +0.j        ]]
```

In [82]:

```
sym = np.transpose( -sksm )
FindEVs( sym )
```

```
matrix :
[[ -0.     -2.     45.   ]
 [  2.     -0.      4.401]
 [-45.     -4.401  -0.   ]]

 EigenValues :
[-2.22044605e-16+45.25890853j -2.22044605e-16-45.25890853j
 -1.92118976e-16 +0.j        ]

 EigenVecs :
[[ 0.00304146-0.70374917j  0.00304146+0.70374917j -0.09724052+0.j        ]
 [-0.03109881-0.06882667j -0.03109881+0.06882667j  0.99427939+0.j        ]
 [ 0.70641603+0.j          0.70641603-0.j          0.0441902 +0.j        ]]
```