

```
> restart;with(LinearAlgebra):
```

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```
> A:=<<I | 1 | 0 | 0>, <-1 | 1+I | 0 | 0>, <1 | -2*I | -1 | 0>, <0 | 1  
| I | 1-I>>;
```

$$A := \begin{bmatrix} I & 1 & 0 & 0 \\ -1 & 1+I & 0 & 0 \\ 1 & -2I & -1 & 0 \\ 0 & 1 & I & 1-I \end{bmatrix} \quad (1.1)$$

```
> <A|IdentityMatrix(4)>;
```

$$\begin{bmatrix} I & 1 & 0 & 0 & 1 & 0 & 0 & 0 \\ -1 & 1+I & 0 & 0 & 0 & 1 & 0 & 0 \\ 1 & -2I & -1 & 0 & 0 & 0 & 1 & 0 \\ 0 & 1 & I & 1-I & 0 & 0 & 0 & 1 \end{bmatrix} \quad (1.2)$$

```
> GaussianElimination(%);
```

$$\begin{bmatrix} I & 1 & 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & -I & 1 & 0 & 0 \\ 0 & 0 & -1 & 0 & 1+I & I & 1 & 0 \\ 0 & 0 & 0 & 1-I & -1+2I & -2 & I & 1 \end{bmatrix} \quad (1.3)$$

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```
> A:=<<3,2,1>|<2,0,-2>|<1,-2,3>>; Eigenvalues(A);
```

$$A := \begin{bmatrix} 3 & 2 & 1 \\ 2 & 0 & -2 \\ 1 & -2 & 3 \end{bmatrix} \quad (2.1)$$
$$\begin{bmatrix} -2 \\ 4 \\ 4 \end{bmatrix}$$

```
> B:=<<1,-3,3>|<3,7,-3>|<6,6,-2>>; Eigenvalues(B);
```

$$B := \begin{bmatrix} 1 & 3 & 6 \\ -3 & 7 & 6 \\ 3 & -3 & -2 \end{bmatrix} \quad (2.2)$$
$$\begin{bmatrix} -2 \\ 4 \\ 4 \end{bmatrix}$$

```
>
```