```
> reset:
  with(LinearAlgebra):
```

Opskriver matrixen.

```
> M:= <<1,2,-1,3>|<6,13,5,-2>|<2,5,-1,2>|<2,9,3,-14>|<4,-1,7,16>>;
```

$$M := \begin{bmatrix} 1 & 6 & 2 & 2 & 4 \\ 2 & 13 & 5 & 9 & -1 \\ -1 & 5 & -1 & 3 & 7 \\ 3 & -2 & 2 & -14 & 16 \end{bmatrix} \quad (1)$$

Reducere den via. "Manuelle RowOps.

```
> RowOperation(M, [2, 1],-2);
```

$$\begin{bmatrix} 1 & 6 & 2 & 2 & 4 \\ 0 & 1 & 1 & 5 & -9 \\ -1 & 5 & -1 & 3 & 7 \\ 3 & -2 & 2 & -14 & 16 \end{bmatrix} \quad (2)$$

```
> RowOperation(%, [4,3],3);
```

$$\begin{bmatrix} 1 & 6 & 2 & 2 & 4 \\ 0 & 1 & 1 & 5 & -9 \\ -1 & 5 & -1 & 3 & 7 \\ 0 & 13 & -1 & -5 & 37 \end{bmatrix} \quad (3)$$

```
> RowOperation(%, [3,1],1);
```

$$\begin{bmatrix} 1 & 6 & 2 & 2 & 4 \\ 0 & 1 & 1 & 5 & -9 \\ 0 & 11 & 1 & 5 & 11 \\ 0 & 13 & -1 & -5 & 37 \end{bmatrix} \quad (4)$$

```
> RowOperation(%, [1,2],-6);
```

$$\begin{bmatrix} 1 & 0 & -4 & -28 & 58 \\ 0 & 1 & 1 & 5 & -9 \\ 0 & 11 & 1 & 5 & 11 \\ 0 & 13 & -1 & -5 & 37 \end{bmatrix} \quad (5)$$

```
> RowOperation(%, [3,2],-11);
```

$$\begin{bmatrix} 1 & 0 & -4 & -28 & 58 \\ 0 & 1 & 1 & 5 & -9 \\ 0 & 0 & -10 & -50 & 110 \\ 0 & 13 & -1 & -5 & 37 \end{bmatrix} \quad (6)$$

```
> RowOperation(%, [4,2],-13);
```

$$\begin{bmatrix} 1 & 0 & -4 & -28 & 58 \\ 0 & 1 & 1 & 5 & -9 \\ 0 & 0 & -10 & -50 & 110 \\ 0 & 0 & -14 & -70 & 154 \end{bmatrix} \quad (7)$$

```
> RowOperation(%, 4,5);
```

$$\begin{bmatrix} 1 & 0 & -4 & -28 & 58 \\ 0 & 1 & 1 & 5 & -9 \\ 0 & 0 & -10 & -50 & 110 \\ 0 & 0 & -70 & -350 & 770 \end{bmatrix} \quad (8)$$

```
> RowOperation(%, [4,3],-7);
```

$$\begin{bmatrix} 1 & 0 & -4 & -28 & 58 \\ 0 & 1 & 1 & 5 & -9 \\ 0 & 0 & -10 & -50 & 110 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix} \quad (9)$$

```
> RowOperation(%, 3,-1/10);
```

$$\begin{bmatrix} 1 & 0 & -4 & -28 & 58 \\ 0 & 1 & 1 & 5 & -9 \\ 0 & 0 & 1 & 5 & -11 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix} \quad (10)$$

```
> RowOperation(%, [1,3],4);
```

$$\begin{bmatrix} 1 & 0 & 0 & -8 & 14 \\ 0 & 1 & 1 & 5 & -9 \\ 0 & 0 & 1 & 5 & -11 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix} \quad (11)$$

```
> RowOperation(%, [2,3],-1);
```

$$\begin{bmatrix} 1 & 0 & 0 & -8 & 14 \\ 0 & 1 & 0 & 0 & 2 \\ 0 & 0 & 1 & 5 & -11 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix} \quad (12)$$

Vi har nu en færdig trappe-form.
Tester at den er rigtig med ReducedRowEchelon.

```
> ReducedRowEchelonForm(M);
```

(13)

$$\begin{bmatrix} 1 & 0 & 0 & -8 & 14 \\ 0 & 1 & 0 & 0 & 2 \\ 0 & 0 & 1 & 5 & -11 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix} \tag{13}$$