```
> with(linalg):
> a := matrix([[2,1,-1,3],[1,-1,2,1],[-4,6,-7,1],[2,0,1,3]]);
```

$$a := \begin{bmatrix} 2 & 1 & -1 & 3 \\ 1 & -1 & 2 & 1 \\ -4 & 6 & -7 & 1 \\ 2 & 0 & 1 & 3 \end{bmatrix}$$

```
> a1 := swaprow(a,1,2);
```

$$a1 := \begin{bmatrix} 1 & -1 & 2 & 1 \\ 2 & 1 & -1 & 3 \\ -4 & 6 & -7 & 1 \\ 2 & 0 & 1 & 3 \end{bmatrix}$$

```
> a2 := addrow(a1,1,2, -2);
```

$$a2 := \begin{bmatrix} 1 & -1 & 2 & 1 \\ 0 & 3 & -5 & 1 \\ -4 & 6 & -7 & 1 \\ 2 & 0 & 1 & 3 \end{bmatrix}$$

```
> a3 := addrow( a2 ,1,3, 4);
```

$$a3 := \begin{bmatrix} 1 & -1 & 2 & 1 \\ 0 & 3 & -5 & 1 \\ 0 & 2 & 1 & 5 \\ 2 & 0 & 1 & 3 \end{bmatrix}$$

```
> a4 := addrow( a3 , 1, 4, -2);
```

$$a4 := \begin{bmatrix} 1 & -1 & 2 & 1 \\ 0 & 3 & -5 & 1 \\ 0 & 2 & 1 & 5 \\ 0 & 2 & -3 & 1 \end{bmatrix}$$

```
> a5 := mulrow( a4, 2, 1/3);
```

$$a5 := \begin{bmatrix} 1 & -1 & 2 & 1 \\ 0 & 1 & \frac{-5}{3} & \frac{1}{3} \\ 0 & 2 & 1 & 5 \\ 0 & 2 & -3 & 1 \end{bmatrix}$$

```
> a6 := addrow( a5, 2, 3, -2);
```

$$a6 := \begin{bmatrix} 1 & -1 & 2 & 1 \\ 0 & 1 & \frac{-5}{3} & \frac{1}{3} \\ 0 & 0 & \frac{13}{3} & \frac{13}{3} \\ 0 & 2 & -3 & 1 \end{bmatrix}$$

```
> a7 := addrow( a6, 2, 4, -2 );
```

$$a7 := \begin{bmatrix} 1 & -1 & 2 & 1 \\ 0 & 1 & \frac{-5}{3} & \frac{1}{3} \\ 0 & 0 & \frac{13}{3} & \frac{13}{3} \\ 0 & 0 & \frac{1}{3} & \frac{1}{3} \end{bmatrix}$$

```
> a8 := mulrow( a7, 3, 3/13);
```

$$a8 := \begin{bmatrix} 1 & -1 & 2 & 1 \\ 0 & 1 & \frac{-5}{3} & \frac{1}{3} \\ 0 & 0 & 1 & 1 \\ 0 & 0 & \frac{1}{3} & \frac{1}{3} \end{bmatrix}$$

```
> a9 := addrow( a8 , 3, 4, -1/3);
```

$$a9 := \begin{bmatrix} 1 & -1 & 2 & 1 \\ 0 & 1 & \frac{-5}{3} & \frac{1}{3} \\ 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

```
> a10 := addrow( a9 , 2, 1, 1);
```

$$a10 := \begin{bmatrix} 1 & 0 & \frac{1}{3} & \frac{4}{3} \\ 0 & 1 & \frac{-5}{3} & \frac{1}{3} \\ 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

```
> a11:= addrow( a10, 3 , 2, 5/3);
```

$$a11 := \begin{bmatrix} 1 & 0 & \frac{1}{3} & \frac{4}{3} \\ 0 & 1 & 0 & 2 \\ 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

```
> a12 := addrow( a11, 3, 1 , -1/3);
```

$$a12 := \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 2 \\ 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

```
>
```