

```
> with(linalg);
```

```
[BlockDiagonal, GramSchmidt, JordanBlock, LUdecomp, QRdecomp, Wronskian, addcol,
addrow, adj, adjoint, angle, augment, backsub, band, basis, bezout, blockmatrix, charmat,
charpoly, cholesky, col, coldim, colspace, colspan, companion, concat, cond, copyinto,
crossprod, curl, definite, delcols, delrows, det, diag, diverge, dotprod, eigenvals,
eigenvalues, eigenvectors, eigenvects, entermatrix, equal, exponential, extend, ffgausselim,
fibonacci, forwardsub, frobenius, gausselim, gaussjordan, geneqns, genmatrix, grad,
hadamard, hermite, hessian, hilbert, htranspose, ihermite, indexfunc, innerprod, intbasis,
inverse, ismith, issimilar, iszero, jacobian, jordan, kernel, laplacian, leastsqrs, linsolve,
matadd, matrix, minor, minpoly, mulcol, mulrow, multiply, norm, normalize, nullspace,
orthog, permanent, pivot, potential, randmatrix, randvector, rank, ratform, row, rowdim,
rowspan, rref, scalarmul, singularvals, smith, stackmatrix, submatrix, subvector,
sumbasis, swapcol, swaprow, sylvester, toeplitz, trace, transpose, vandermonde, vecpotent,
vectdim, vector, wronskian]
```

(1)

```
> a := matrix([[-2*I, 4, 0], [-1, -2*I, 0], [1, 4, -1-2*I]]);
```

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

(2)

```
> mulrow(a, 1, 1/(-2*I));
```

$$\begin{bmatrix} 1 & 2I & 0 \\ -1 & -2I & 0 \\ 1 & 4 & -1-2I \end{bmatrix}$$

(3)

```
> addrow(% , 1, 2, 1);
```

$$\begin{bmatrix} 1 & 2I & 0 \\ 0 & 0 & 0 \\ 1 & 4 & -1-2I \end{bmatrix}$$

(4)

```
> addrow(% , 1, 3, -1);
```

$$\begin{bmatrix} 1 & 2I & 0 \\ 0 & 0 & 0 \\ 0 & 4-2I & -1-2I \end{bmatrix}$$

(5)

```
> mulrow(% , 3, 1/(4-2*I));
```

$$\begin{bmatrix} 1 & 2I & 0 \\ 0 & 0 & 0 \\ 0 & 1 & -\frac{1}{2} \end{bmatrix}$$

(6)

```
> swaprow(% , 2, 3);
```

(7)

	$\begin{bmatrix} 1 & 2I & 0 \\ 0 & 1 & -\frac{I}{2} \\ 0 & 0 & 0 \end{bmatrix}$	(7)
---	---	-----

	$\begin{bmatrix} 1 & 0 & -1 \\ 0 & 1 & -\frac{I}{2} \\ 0 & 0 & 0 \end{bmatrix}$	(8)
---	---	-----

	$\begin{bmatrix} 1 & 0 & -1 \\ 0 & 1 & -\frac{I}{2} \\ 0 & 0 & 0 \end{bmatrix}$	(9)
---	---	-----

	0	(10)
---	-----	------