

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

Warning, the protected names norm and trace have been redefined and unprotected

[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, gaussjord, 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, rowspace, rowspan, rref, scalarmul, singularvals, smith, stackmatrix, submatrix, subvector, subbasis, swapcol, swaprow, sylvester, toeplitz, trace, transpose, vandermonde, vecpotent, vectdim, vector, wronskian]

```
> a:=4*sqrt(15)/sqrt(3);
```

$$a := \frac{4}{3} \sqrt{15} \sqrt{3}$$

```
> b:=4*sqrt(12)/sqrt(15);
```

$$b := \frac{8}{15} \sqrt{15} \sqrt{3}$$

```
> c:=4*sqrt(7)/sqrt(35);
```

$$c := \frac{4}{35} \sqrt{7} \sqrt{35}$$

```
> M2:=matrix(2,2,[[0,c*sqrt(5)],[c*sqrt(5),0]]);
```

$$M2 := \begin{bmatrix} 0 & \frac{4}{35} \sqrt{7} \sqrt{35} \sqrt{5} \\ \frac{4}{35} \sqrt{7} \sqrt{35} \sqrt{5} & 0 \end{bmatrix}$$

```
> eigenvals(M2);
```

4, -4

```
> M3:=matrix(3,3,[[0,b*sqrt(3),0],[b*sqrt(3),0,c*sqrt(8)],[0,c*sqrt(8),0]]);
```

$$M3 := \begin{bmatrix} 0 & \frac{8}{5} \sqrt{15} & 0 \\ \frac{8}{5} \sqrt{15} & 0 & \frac{8}{35} \sqrt{7} \sqrt{35} \sqrt{2} \\ 0 & \frac{8}{35} \sqrt{7} \sqrt{35} \sqrt{2} & 0 \end{bmatrix}$$

```
> eigenvals(M3);
```

```
0, 8, -8
```

```
> M4:=matrix(4,4,[[0,a*sqrt(1),0,0],[a*sqrt(1),0,b*sqrt(4),0],[0,b*sqrt(4),0,c*sqrt(9)],[0,0,c*sqrt(9),0]]);
```

$$M4 := \begin{bmatrix} 0 & \frac{4}{3}\sqrt{15}\sqrt{3} & 0 & 0 \\ \frac{4}{3}\sqrt{15}\sqrt{3} & 0 & \frac{16}{15}\sqrt{15}\sqrt{3} & 0 \\ 0 & \frac{16}{15}\sqrt{15}\sqrt{3} & 0 & \frac{12}{35}\sqrt{7}\sqrt{35} \\ 0 & 0 & \frac{12}{35}\sqrt{7}\sqrt{35} & 0 \end{bmatrix}$$

```
> eigenvals(M4);
```

```
4, -4, -12, 12
```

```
>
```