```
with(linalg):
A := matrix(3, 3, [1,-2, 2,-2, 1, 2, 2, 2, 1]);
```

$$A := \begin{bmatrix} 1 & -2 & 2 \\ -2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix} \tag{1}$$

```
eigenvectors(A);
```

$$\left[-3, 1, \left\{\left[\begin{array}{ccc} -1 & -1 & 1 \end{array}\right]\right\}\right], \left[3, 2, \left\{\left[\begin{array}{ccc} -1 & 1 & 0 \end{array}\right], \left[\begin{array}{ccc} 1 & 0 & 1 \end{array}\right]\right\}\right] \tag{2}$$

```
charpoly(A, λ);
```

$$\lambda^3 - 3\lambda^2 - 9\lambda + 27 \tag{3}$$

solve for lambda →

$$[[\lambda = -3], [\lambda = 3], [\lambda = 3]] \tag{4}$$