

## MATH 308 Sheet 5

### Eigenvalues and eigenvectors of a matrix.

It is easy to find eigenvalues and eigenvectors of a matrix using Maple.

**Example 1.** Find eigenvalues and eigenvectors for the matrix

$$\begin{bmatrix} 4 & 2 & 3 \\ 2 & 1 & 2 \\ -1 & 2 & 0 \end{bmatrix}$$

> with(linalg):

> A:=matrix(3,3,[4,2,3,2,1,2,-1,2,0]);

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

> ev:=eigenvects(A);

$$ev := [-1, 1, \left\{ \begin{bmatrix} 1 \\ 2 \end{bmatrix}, 1, \frac{-3}{2} \right\}], [1, 1, \{[1, 0, -1]\}], [5, 1, \{[2, 1, 0]\}]$$