eigenquiz

Given the following matrix:

$$> A := \begin{bmatrix} 3 & 3 & 3 & 3 \\ 3 & -5 & 1 & 1 \\ 3 & 1 & -5 & 1 \\ 3 & 1 & 1 & -5 \end{bmatrix}$$

a) If $\langle 3, 1, 1, 1 \rangle$ is an eigenvector of A, how would you confirm this and find its corresponding eigenvalue using only matrix multiplication?
b) If -6 is an eigenvalue of A, how would you find a basis of the corresponding eigenspace (the subspace whose nonzero elements are eigenvectors of this matrix) by solving a linear system of equations? Remember, a basis is a set of vectors.

eigenvectors

This will answer the question of course, but not with its conditions on the method of solution, intended to help you better understand eigevalues and eigenvectors:

```
> with(Student[LinearAlgebra]) :
> Eigenvectors(A)
```