Exercise sheet no. 8

Submission until 19.12.2012 10:00 am in the tutorials

Homework 13: Eigenvalues and Eigenvectors (10 Points)

Given matrix A

$$A = \begin{pmatrix} 3 & 5 & 0 \\ 1 & 3 & 2 \\ 0 & 2 & 3 \end{pmatrix}$$

a) Find the three eigenvalues of matrix A by using the *characteristic polynom*.

b) Use the eigenvalues to calculate the eigenvectors of matrix A:

$$det(\lambda_i \mathbb{1} - A) = 0$$

Note, that only the direction of the eigenvectors is determined, but not their length. Find the normalized eigenvalues (length $= 1$).