TMA 4115 Matematikk 3
Lecture for KJ & NANO

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In today's lecture we will...

- learn more about eigenvalues and eigenvectors,
- learn how to compute eigenvalues and eigenvectors.

Eigenvector and eigenvalue

Definition of Eigenvectors and Eigenvalues

A a square matrix. A non-zero vector $\overrightarrow{x}$ is an **eigenvector** (of A) with **eigenvalue** λ if

$$A\overrightarrow{x} = \lambda\overrightarrow{x} \quad \text{holds for } \lambda.$$

We note that...

- eigenvectors are non-zero but zero can be an eigenvalue

  Exampel: If A is the zero matrix, $A\overrightarrow{x} = \overrightarrow{0} = 0\overrightarrow{x}$.

- $\overrightarrow{v}$ and $\overrightarrow{w}$ eigenvectors for A (with eigenvalue λ), then $\overrightarrow{v} + r\overrightarrow{w}$ is eigenvector with eigenvalue λ