Diagonal Matrices

$$D = \begin{bmatrix} d_1 & 0 & 0 & 0 \\ 0 & d_2 & 0 & 0 \\ 0 & 0 & \dots & 0 \\ 0 & 0 & 0 & d_n \end{bmatrix}$$

Scaling along the axis (plural)

$$\vec{x} = \begin{bmatrix} x_1 \\ x_2 \\ \dots \\ x_n \end{bmatrix}$$

$$D\vec{x} = \begin{bmatrix} d_1 x_1 \\ d_2 x_2 \\ \dots \\ d_n x_n \end{bmatrix}$$

A = arbitrary matrix = $\begin{bmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & \dots & \dots & \dots \\ \dots & \dots & \dots & \dots \\ a_{n1} & \dots & \dots & a_{nn} \end{bmatrix}$

DA = Scaling the rows = $\begin{bmatrix} d_1(\text{Row } 1) \\ d_2(\text{Row } 2) \\ \dots \\ d_n(\text{Row } n) \end{bmatrix}$

AD = Scaling the columns = ...

Spectrum of D = $\{d_1, d_2, \dots d_n\} / \{0\}$

E_{d_i} = i^{th} axis = In **general**, unless $d_i = d_j$ for some i, j