$$\begin{pmatrix} 1 & 0 \\ 0 & 2 \end{pmatrix}\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} = \begin{pmatrix} 1 & 2 \\ 6 & 8 \end{pmatrix}$$

$$\neq \qquad D^2 \to E_n$$

$$\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix}\begin{pmatrix} 1 & 0 \\ 0 & 2 \end{pmatrix} = \begin{pmatrix} 1 & 4 \\ 3 & 8 \end{pmatrix}$$

$\det(A) = \det(A^T)$, $\det(A) = \det(A^H)$?

$\to$ im Allgemeinen nein!

$$\det(A^H) = \det(\overline{A^T}) = \overline{\det(A^T)} = \overline{\det(A)}$$

A reell: $\det(A) = \det(A^H)$

$$\det\left(\begin{pmatrix} 1+i & 1 \\ i & 2 \end{pmatrix}\right) = 2(1+i) - i = 2+i$$

$$\det\left(\begin{pmatrix} 1-i & -i \\ 1 & 2 \end{pmatrix}\right) = 2(1-i) - (-i) = 2-i$$

komplex konj.