Matrix Transpose and Powers

The Transpose of A (A^T) is the matrix whose columns are the rows of A:

$$\begin{bmatrix} 1 & 2 & 3 & 4 \\ 0 & 1 & 0 & 2 \end{bmatrix}^T = \begin{bmatrix} 1 & 0 \\ 2 & 1 \\ 3 & 0 \\ 4 & 2 \end{bmatrix}$$

Powers

$$A^k = AA \dots A$$

Properties

1. $(A^T)^T = A$
2. $(A + B)^T = A^T + B^T$
3. $(\mathbf{r}A)^T = \mathbf{r}A^T$
4. $(AB)^T = B^T A^T$