

Matrices

* Matrix

- similar to a table, like an array
- two matrices are equal if $A_{ik} = B_{ik}$

* Sum

- must be same size
- add same positions

* Product

- if $A = m \times n$, then $B = n \times k$ (must be to multiply)
- A rows = B cols
- if $2 \times 3 = 3 \times 4$, then you end up with a 2×4
- $AB \neq BA$ in general
- $A(BC) = (AB)C$
- $A(B+C) = AB + AC$

* Transpose

- interchange rows & columns
- $(AB)^T = B^T A^T$

* Inverse

- for a square matrix, A , $A I_n = A$
- if $AB = I$, then B is A 's inverse
- $A = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$
- $A^{-1} = \begin{bmatrix} d/D & -b/D \\ -c/D & a/D \end{bmatrix}$ where $D = ad - bc$