1 Introducing

DONE

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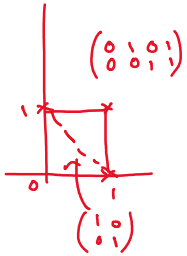
$$\begin{matrix} m \\ \end{matrix}\begin{bmatrix} a & b \\ c & d \\ e & f \end{bmatrix}$$ ← $m \times n$ 3×2 matrix

m is rows

n is columns

$I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

$0 = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$



Matrix additions

$A.m, A.n = B.m, B.n$

↑ If not the case, say "Not conformable"

Matrix addition is associative & commutative

Matrix subtraction is not associative // commutative

Multiplying Matrices

$A \cdot B$ { $n_A = n_B$ to happen

Result will have $m_A \times n_B$

$AB \neq BA$ (!Commutative)

$(AB)C = A(BC)$ (Associative)

$$\begin{pmatrix} x & 3y \\ 4x & 2y \end{pmatrix}\begin{pmatrix} y & 3x \\ x & x \end{pmatrix} = \begin{pmatrix} xy+3xy & 3x^2+3xy \\ 4xy+2xy & 6xy+2xy \end{pmatrix}$$

Symmetric matrices

$$\begin{pmatrix} x & a \\ a & y \end{pmatrix} \text{ or } \begin{pmatrix} x & a & b \\ a & y & c \\ b & c & z \end{pmatrix}$$

$$A = \begin{pmatrix} 2 & 3x \\ -4 & 5x \end{pmatrix} \quad B = \begin{pmatrix} 4x & 1 \\ 0 & 3 \end{pmatrix}$$

AB is symmetric

$\therefore -16x = 2 + 9x$

$\therefore -25x = 2$

$\therefore x = -\frac{2}{25}$ //

$$AB = \begin{pmatrix} 2 & 3x \\ -4 & 5x \end{pmatrix}\begin{pmatrix} 4x & 1 \\ 0 & 3 \end{pmatrix}$$

$$\begin{pmatrix} 8x & 2+9x \\ -16x & -4x+15x \end{pmatrix}$$