

2-3 Modeling w/ matrices

$$\begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \\ a_{31} & a_{32} \end{bmatrix} \begin{matrix} \text{---} \\ \text{---} \\ \text{---} \end{matrix} \begin{matrix} \text{Rows (m)} \\ \\ \end{matrix}$$

| |
columns (n) m x n

a_{12} (Element in 1st row
2nd column)

Ex $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}_{2 \times 2}$

$\begin{bmatrix} 1 & 2 & 3 \\ -4 & 0 & 2 \end{bmatrix}_{2 \times 3}$

Equal matrices - Equal iff they have same dimensions & are identical.

Ex $\begin{bmatrix} y \\ y-3 \end{bmatrix} = \begin{bmatrix} 4x \\ 2x+1 \end{bmatrix}$ $y = 4x$ $y-3 = 2x+1$
 $+3$ $+3$
 $y = 2x+4$

$2x+4 = 4x$ $y = 4(2)$
 $-2x$ $-2x$
 $4 = 2x$ $y = 8$
 $\frac{4}{2} = \frac{2x}{2}$ $(y = 8)$
 $2 = x$

A + B
A - B

A + B if $A = \begin{bmatrix} -7 & 4 \\ 5 & 0 \\ 3 & -1 \end{bmatrix}$ $B = \begin{bmatrix} 6 & 10 \\ 8 & -9 \\ -2 & 5 \end{bmatrix}$

$A + B = \begin{bmatrix} -7 & 4 \\ 5 & 0 \\ 3 & -1 \end{bmatrix} + \begin{bmatrix} 6 & 10 \\ 8 & -9 \\ -2 & 5 \end{bmatrix}$
 $= \begin{bmatrix} -1 & 14 \\ 13 & -9 \\ 1 & 4 \end{bmatrix}$