

13 - 2

Introduction to Matrices

matrix: rectangular array of numbers

$$\begin{bmatrix} 1 & 2 & -3 \\ 0 & 5 & 4 \end{bmatrix}$$

2 x 3

rows x columns
≡ |||

element: each number in the matrix

Name the dimensions of each matrix.

Ex: $[3 \quad -2 \quad 4]$ 1×3

Ex: $\begin{bmatrix} 4 & 1 \\ -6 & 3 \end{bmatrix}$ 2×2

Ex: $\begin{bmatrix} 3 & 0 \\ 1 & 5 \\ 6 & 2 \end{bmatrix}$ 3×2

****Two matrices are equal if they have the same dimensions and all corresponding elements are equal.****

$$\begin{bmatrix} 2 & 5 \\ 3 & -6 \end{bmatrix} = \begin{bmatrix} 2 & 5 \\ 3 & -6 \end{bmatrix}$$

$$\begin{bmatrix} 4 & 1 \\ 6 & 5 \end{bmatrix} \neq \begin{bmatrix} 4 & 1 & 0 \\ 6 & 5 & 0 \end{bmatrix}$$

Add or Subtract

+/- corresponding elements

only if same dimensions

$$A = \begin{bmatrix} 6 & -4 \\ -2 & 1 \end{bmatrix}$$

Ex: A + B

$$\begin{bmatrix} 9 & -2 \\ -9 & 10 \end{bmatrix}$$

$$B = \begin{bmatrix} 3 & 2 \\ -7 & 9 \end{bmatrix}$$

Ex: B - C

$$C = \begin{bmatrix} 0 & 5 & -3 \\ 11 & 4 & 8 \end{bmatrix}$$

impossible

scalar: a constant multiplied to a matrix

Ex: If $M = \begin{bmatrix} 6 & -5 \\ 10 & 3 \\ -1 & 8 \end{bmatrix}$, find $4M$.

$$4 \begin{bmatrix} 6 & -5 \\ 10 & 3 \\ -1 & 8 \end{bmatrix} = \begin{bmatrix} 24 & -20 \\ 40 & 12 \\ -4 & 32 \end{bmatrix}$$

Homework:

p.718 #17 - 20, 28 - 38 even



list the
dimensions

$5A + B$