

Monday, October 17, 2016

New Seats

New Calendar - Chapter 7 - Matrices

New Notes - What is a Matrix?



7.2 Matrices

matrix: a rectangular organizer of numbers

name: $m \times n$

m = number of rows

n = number of columns

Examples

①
$$\begin{bmatrix} 2 & 1 \\ 3 & 8 \\ 0 & 1 \end{bmatrix}$$

① ② } rows
① ② } columns

3x2 matrix
 $a_{21} = 3$

Element: a number in the matrix

name: a_{mn}

②
$$\begin{bmatrix} 1 & 0 & 0 & 4 \\ 2 & 1 & 8 & 2 \\ -3 & 8 & 0 & -1 \end{bmatrix}$$

3x4 matrix
 $a_{23} = 8$ $a_{31} = -3$
 $a_{14} = 4$ $a_{33} = 0$

Matrix Addition + Subtraction

... must be same size to add/subtract

* Matrices must be same size to add/subtract

$$\textcircled{3} \begin{bmatrix} 2 & -1 \\ 0 & 4 \end{bmatrix} + \begin{bmatrix} -1 & -5 \\ 2 & 6 \end{bmatrix} = \begin{bmatrix} 1 & -6 \\ 2 & 10 \end{bmatrix}$$

2×2 2×2 2×2
SQUARE MATRIX

$$\textcircled{4} \begin{bmatrix} 3 & 4 \\ -1 & 0 \\ -3 & -8 \end{bmatrix} - \begin{bmatrix} 4 & -1 \\ 1 & 6 \\ -3 & 2 \end{bmatrix} = \begin{bmatrix} -1 & 5 \\ -2 & -6 \\ 0 & -10 \end{bmatrix}$$

3×2 3×2 3×2

Multiplying By a Scalar

* a scalar is a real number

$$\textcircled{5} -3 \begin{bmatrix} 2 & -1 \\ 0 & -4 \end{bmatrix} = \begin{bmatrix} -6 & 3 \\ 0 & 12 \end{bmatrix}$$

2×2 2×2

$$\textcircled{6} 2 \begin{bmatrix} -1 & 4 & 8 \\ 0 & 2 & -1 \end{bmatrix} - 3 \begin{bmatrix} 0 & -1 & 1 \\ 1 & 2 & -1 \end{bmatrix} = \begin{bmatrix} -2 & 11 & 13 \\ -3 & -2 & 1 \end{bmatrix}$$