

Matrices

Note Title

2/4/2009

Objectives: To 1) [redacted], 2) solve equations involving matrices, 3) +, -, *, ξ scalar multiply matrices.

matrix: a rectangular array of variables or constants arranged in [redacted] and vertical columns

Ex1:

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

$$L = \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{bmatrix}$$

$$R = \begin{bmatrix} 5 & -7 & 4 \end{bmatrix}$$

$$S = \begin{bmatrix} 1 & 2 \\ -3 & 5 \end{bmatrix}$$

Ex2 Equal Matrices : same dimensions, every pair of elements is

a) Solve.

$$\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} =$$

$$\begin{bmatrix} a & b \\ 3 & c \end{bmatrix}$$

equal

b) Solve.

$$\begin{bmatrix} y & 3 \end{bmatrix} =$$

$$\begin{bmatrix} 3x-2 \\ 2y+x \end{bmatrix}$$

To add or subtract matrices the matrices must have the same dimensions.

Operations on Matrices

$$\begin{array}{cc} & \begin{array}{cc} c_1 & c_2 \end{array} \\ \begin{array}{c} R_1 \\ R_2 \end{array} & \begin{bmatrix} \underline{R_1c_1} & \underline{R_1c_2} \\ \underline{R_2c_1} & \underline{R_2c_2} \end{bmatrix} \end{array}$$

$$A = \begin{bmatrix} 6 & 4 \\ -1 & 0 \end{bmatrix}$$

$$B = \begin{bmatrix} -3 & -1 \\ 0 & 3 \end{bmatrix}$$

Ex3 $2A - 3B$

Ex 4 $A = \begin{bmatrix} 5 & 8 & -4 \end{bmatrix}$ $B = \begin{bmatrix} 12 & 5 \end{bmatrix}$

$$C = \begin{bmatrix} 3 & 7 \\ -2 & 1 \end{bmatrix} \quad D = \begin{bmatrix} 2 & -3 \\ 5 & -4 \end{bmatrix}$$

a) $3A =$

c) $2A + 4B =$

b) $C - D =$

Ex5 Multiplying Matrices

$$\begin{bmatrix} 9 & -1 \\ 3 & 4 \end{bmatrix} \cdot \begin{bmatrix} 3 & -9 \\ 5 & 7 \end{bmatrix}$$

Ex 4

$$K = \begin{bmatrix} -3 & 2 \\ -1 & 2 \end{bmatrix}$$

$$L =$$

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

$$LK =$$

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