

# 9.1 – Matrices I

## I. Terms and Definitions

A. A \_\_\_\_\_ is a rectangular array of numbers enclosed by brackets.

Examples of matrices:  $\begin{bmatrix} 2 & 0 \\ 7 & 15 \\ -3 & 19 \end{bmatrix}$   $\begin{bmatrix} 3 & 0 & 9 \\ 0 & -2 & 0 \end{bmatrix}$   $\begin{bmatrix} -3 & 3 \\ 8 & -1 \end{bmatrix}$

B. The numbers in a matrix are called the \_\_\_\_\_ of the matrix. The number of \_\_\_\_\_ (horizontal) and the number of \_\_\_\_\_ (vertical) determine the \_\_\_\_\_ of the matrix. The dimensions of a matrix are always written rows X columns.

Examples: What are the dimensions of the following matrices?

1.  $\begin{bmatrix} 2 & 0 \\ 7 & 15 \\ -3 & 19 \end{bmatrix}$  \_\_\_\_\_ X \_\_\_\_\_      2.  $\begin{bmatrix} 3 & 0 & 9 \\ 0 & -2 & 0 \end{bmatrix}$  \_\_\_\_\_ X \_\_\_\_\_

C. In matrix algebra, a real number is called a \_\_\_\_\_. To multiply a matrix by a scalar, multiply each element of the matrix by the scalar.

Example:  $-2 \begin{bmatrix} 2 & -3 \\ 3 & 4 \end{bmatrix} = \begin{bmatrix} \underline{\hspace{2cm}} & \underline{\hspace{2cm}} \\ \underline{\hspace{2cm}} & \underline{\hspace{2cm}} \end{bmatrix} = \begin{bmatrix} \underline{\hspace{1cm}} & \underline{\hspace{1cm}} \\ \underline{\hspace{1cm}} & \underline{\hspace{1cm}} \end{bmatrix}$