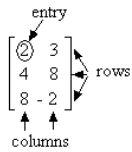


Study Guide

Scalar Multiplication with Matrices 02/29/2012

Scalar Multiplication With Matrices

A matrix is an array of numbers arranged in rows and columns. Rows are horizontal and columns are vertical. A scalar is a real number that can be multiplied by a matrix. In scalar multiplication, each entry is multiplied by the scalar. An entry is a number in the matrix.



Example 1: Multiply the matrix by the scalar.

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

(1) (2) (3)

$$3 \begin{bmatrix} 1 & 4 \\ -1 & 9 \end{bmatrix} \quad \begin{bmatrix} (3)(1) & (3)(4) \\ (3)(-1) & (3)(9) \end{bmatrix} \quad \begin{bmatrix} 3 & 12 \\ -3 & 27 \end{bmatrix}$$

Step 1: Rewrite the problem.

Step 2: Multiply each entry in the matrix by the scalar, 3.

Step 3: Simplify.

Answer: $\begin{bmatrix} 3 & 12 \\ -3 & 27 \end{bmatrix}$

Example 2: Multiply the matrix by the scalar.

$$-2 \begin{bmatrix} 11 & 2 \\ -9 & 12 \\ -6 & 3 \end{bmatrix}$$

(1) (2) (3)

$$-2 \begin{bmatrix} 11 & 2 \\ -9 & 12 \\ -6 & 3 \end{bmatrix} \quad \begin{bmatrix} (-2)(11) & (-2)(2) \\ (-2)(-9) & (-2)(12) \\ (-2)(-6) & (-2)(3) \end{bmatrix} \quad \begin{bmatrix} -22 & -4 \\ 18 & -24 \\ 12 & -6 \end{bmatrix}$$

Step 1: Rewrite the problem.

Step 2: Multiply each entry in the matrix by the scalar, - 2.

Step 3: Simplify.

Answer: $\begin{bmatrix} -22 & -4 \\ 18 & -24 \\ 12 & -6 \end{bmatrix}$