**8.2 Operations with Matrices**

**Representation of Matrices**

1. A matrix can be denoted by an uppercase letter: ex: *A*, *B*, *C*, etc.
2. A matrix can be denoted by a representative element enclosed in brackets: , …
3. A matrix can be denoted as a rectangular array of numbers

**Equal Matrices – two matrices are equal if they have the same order (dimensions) and their corresponding entries are equal.**

Ex: Solve for , , and

Ex: Solve for each variable.

**Addition of Matrices:** two matrices may be added if they have the same order. Add their corresponding entries.

Ex:

Ex:

Ex:

**Scalar Multiplication -** a matrix can be multiplied by a scalar

(multiply each entry by the scalar)

Ex:

Ex:

Ex:

Ex:

Find:

Ex:

Ex:

**Matrices on TI-84 calculators**

**Solving a Matrix Equation**

Solve for in the equation

**Matrix Multiplication:** Matrices *A* and *B* can be multiplied if the number of columns in matrix *A* matches the number of rows in matrix *B*.

the result is a matrix

Find

Find

more multiplication examples

Ex:

Ex:

Ex:

Ex:

Ex:

**Identity Matrix (must be a square matrix)**

Ex:

Write the system of linear equations as a matrix equation ()

Use Gauss-Jordan Elimination on the augmented matrix to solve for matrix .

An electronics manufacturer produces 3 models of TVs which are shipped to two warehouses. The number of units of model *i* that are shipped to location *j* are represented by the matrix .

The prices per unit are represented by the matrix:

Compute *BA* and interpret the results.