# Finding Inverses of 3x3 Matrices Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## **On TI Graphing Calculators**

One method of finding the inverse of a 3x3 matrix involves using a graphing calculator. Store the following matrix into [A]. 

1. Press the **2nd** key, then **MATRIX** (2nd of x-1)
2. Arrow to the right to the **EDIT** menu, then press **ENTER** to edit matrix [A]
3. Type a **3**, arrow to the right and type a **3** to tell your calculator it’s a 3x3 matrix.
4. Press **ENTER** and begin typing the entries above into the matrix, using the **ENTER** key to advance to the next entry. When you are finished you calculator should look like this.
5. Press **2nd** then **QUIT**. Press the **MATRIX** button again, press **ENTER** to place [A] on the home screen, then press the **x-1** button to ask for the inverse of matrix A. Press **ENTER** to display A-1 and write the answer below.

***Find the inverses of the following matrices.***

2.  3.  4. 

Matrices can be used to solve systems of equations. The following equations are changed to matrices, the inverse of the first matrix is multiplied by the last matrix and the result is the solution to the system.

The system

 is changed to 

Store the first matrix in [A], the second (the “answer” matrix) in [B]. Then take [A]-1 times [B].

5. Write your result. x = \_\_\_\_\_\_\_\_\_, y = \_\_\_\_\_\_\_\_\_\_, z = \_\_\_\_\_\_\_\_\_\_

6. Find the solution to the system

 3x + 2y – z = 11

 2x – y + 2z = -3

 x + 3y – z = 8

x = \_\_\_\_\_\_\_\_\_, y = \_\_\_\_\_\_\_\_\_\_, z = \_\_\_\_\_\_\_\_\_\_