Section 3.8 Identity and Inverse Matrices

Remember the identity properties?

____ + 6 = 6?

____ x 4 = 4?

With the identity, you get back what you started with

Identity Matrix: a square matrix that, when multiplied by another matrix is the identity. 1.

In matrices, 1 is a matrix with 1's down the diagonal and zeros for every other element

$$I = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

Find the inverse of matrix A:

$$A = \begin{bmatrix} -1 & 0 \\ 8 & -2 \end{bmatrix}$$

Determine if two matrices are inverses:

Use matrix multiplication X•Y and determine if their product is 1 (identity)

$$X = \begin{bmatrix} 3 & -2 \\ -1 & 1 \end{bmatrix} \quad Y = \begin{bmatrix} \frac{1}{2} & \frac{1}{2} \\ -1 & \frac{1}{4} \end{bmatrix}$$

$$X = \begin{bmatrix} 3 & -2 \\ -1 & 1 \end{bmatrix} \quad Y = \begin{bmatrix} 1 & 2 \\ 1 & 3 \end{bmatrix}$$

Find the inverse of a matrix, if it exists:

$$A=\begin{bmatrix}2 & 5 & 2\\ 1 & 4 & 1\\ 6 & 3 & 3\end{bmatrix}$$

Use the inverse key on your TI84 (x^{-1})