Notes on the Identity Matrix

Let A be any 3 x 3 matrix and let

 1 0 0

I = 0 1 0 A =

 0 0 1

 Show that IA = AI = A

The matrix *I* is called an **identity matrix.** An identity matrix is any matrix in which each of the entries along the main diagonal are ones and all other entries are zeros. Identity matrices act in the same way for matrix products as the number one does for number products.

Explain why the identity matrix works with matrices the same way that numerical multiplication does with the number 1.

The matrix below is called an upper triangle matrix.

 1 1 1

A = 0 1 1

 0 0 1

Use a graphing calculator to:

a. Calculate A2, A3, A4

b. Make a conjecture about the form Ak

c. Test your conjecture by computing another power of A.