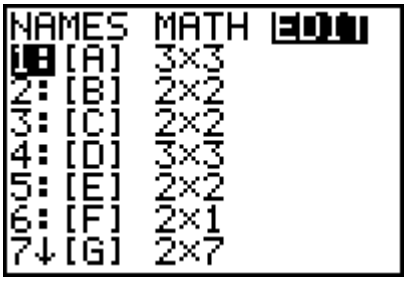
Brief Instructions for Some Matrix Operations Using the TI-83/84 Series Calculator

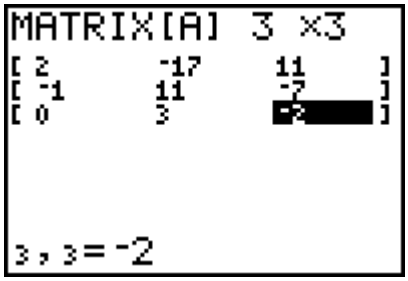
NOTE: Follow instructions across from left to right. Instructions may vary from TI-83 to TI-84, such as having to use the 2nd key to obtain Matrix on the TI-83 Plus and TI-84.

Entering and Editing a Matrix

Press **MATRIX**, right arrow to **EDIT**. Press Number **1** or highlight **1** and press **ENTER**.

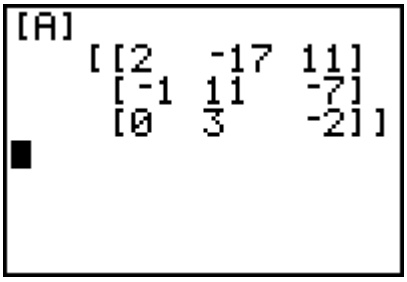


Matrix A is a 3x3. Press **ENTER** after each number. To save the matrix, press **QUIT** [2nd MODE].

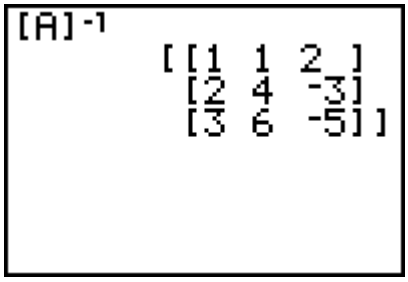


Finding the Inverse and the Determinant of Matrix A

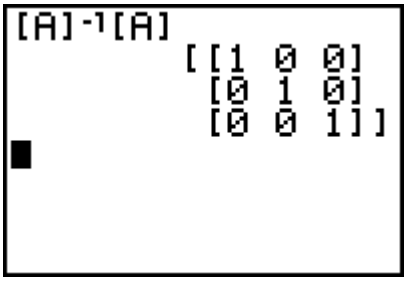
To check the entries in Matrix A, press **MATRIX**, number **1**, and **ENTER**.



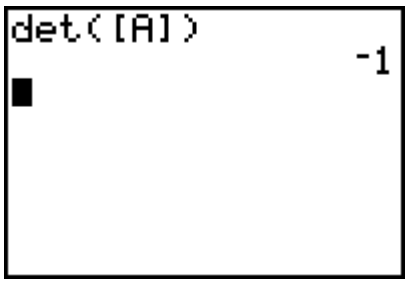
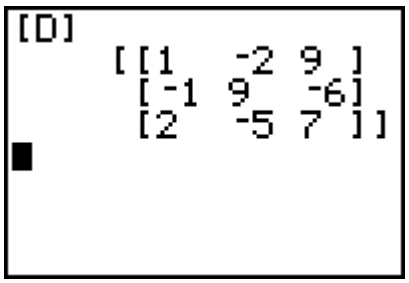
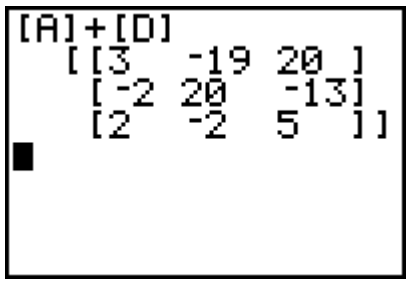
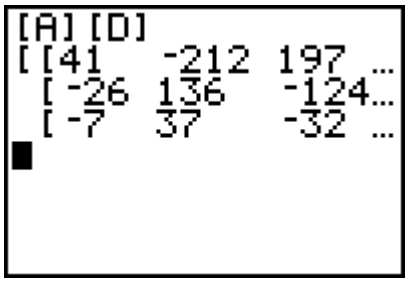
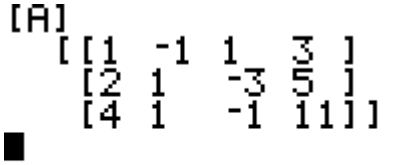
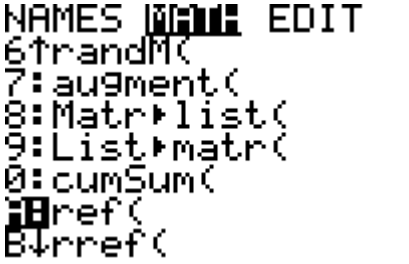
To find A inverse, press M**ATRIX**, number **1**, x^{-1}, and **ENTER**.



To find the product of A inverse and A, press **MATRIX**, number **1**, x^{-1}, **MATRIX**, number **1**, and **ENTER**.



To find det(A), press **MATRIX** and the right arrow to highlight **MATH**.

Press number **1**, **MATRIX**, number **1**, close **)**, and **ENTER**. det([A]) = -1			
Adding and Multiplying Two Matrices			
Matrix D as shown to the right was stored in the TI-83.		To add matrix A and matrix D, press **MATRIX**, number **1**, **+**, **MATRIX**, number **4**, and **ENTER**.	
To find the product of matrix A matrix D, press **MATRIX**, number **1**, **MATRIX**, number **4**, and **ENTER**.			
Solve a System of Equations Using Gaussian Elimination and Gauss-Jordan Elimination Methods			
This is an augmented matrix used to solve a system of three equations with variables x, y, and z.		To solve by the Gaussian Elimination and Back-Substitution method, use the **ref(** , row-echelon form method. Press **MATRIX**, right arrow to get to **MATH**, and down arrow to **ref(**, and **ENTER**	

With **ref(** on the screen, return to the matrix menu to obtain **Matrix A** and press **ENTER**	ref([A]) [[1 .25 -.25 2.… [0 1 -1 -.… [0 0 1 .2…]	The third column of **ref ([A])** is **2.75, -0.2, and 0.2**. From Row 3, we get z = 0.2. Use this value to back-substitute into Row 2 and get y = 0. Substitute the y- and z-values into Row 1 to get x = 2.8. So our solution is **(2.8, 0, 0.2)**.
To solve by the Gaussian-Jordan Elimination method, use the **rref(** , reduced row-echelon form method. Press **MATRIX**, right arrow to get to **MATH**, and down arrow to **rref(**, and **ENTER**	rref([A]) [[1 0 0 2.8] [0 1 0 0] [0 0 1 .2]] With **rref(** on the screen, return to the matrix menu to obtain **Matrix A** and press **ENTER**	The third column of **rref ([A])** is **2.8, 0, and 0.2**. The matrix is in reduced row-echelon form. Row 1 indicates that x = 2.8. Row 2 indicates that y = 0. Row 3 yields z = 0.2. So our solution is **(2.8, 0, 0.2)**.

Solve a System of Equations Using Matrices: $X = A^{-1}B$

Enter the coefficients of the variables as **Matrix A** and the constants as **Matrix B** as shown on the right.	[[1 -1 1] [2 1 -3] [4 1 -1]] [B] [[3] [5] [11]]	Press **Matrix**, number **1**, and x^{-1} to get **[A]**$^{-1}$. Press **Matrix**, number **2** to get **[B]**. Once **[A]**$^{-1}$**[B]** is on screen, press **Enter** to get the answer. So our solution is **(2.8, 0, 0.2)**.	[A]$^{-1}$[B] [[2.8] [0] [.2]]