

## MATH 121A Prep: Row Operations

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1. Put the matrix  $\begin{bmatrix} 0 & 2 & 4 \\ 1 & 1 & 1 \\ -1 & 1 & 3 \end{bmatrix}$  in reduced row echelon form.

2. Solve the matrix equation  $\begin{bmatrix} 1 & -2 & 3 \\ 0 & -1 & -1 \\ 2 & 2 & -1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 10 \\ -1 \\ 0 \end{bmatrix}$

3. One method of finding the inverse of an  $n \times n$  matrix  $A$  is to form an augmented matrix  $[ A \mid I_n ]$  (where  $I_n$  is the  $n \times n$  identity matrix) and then row reduce until the left hand side becomes the identity. The right hand side is then the inverse, that is after row reduction you have augmented matrix  $[ I_n \mid A^{-1} ]$ .

Use this method to find the inverse of  $A = \begin{bmatrix} 1 & 2 & 1 \\ -3 & -5 & -3 \\ 2 & -3 & 1 \end{bmatrix}$