

Practice #3 - Linear Algebra

Suppose you have m vectors in \mathcal{R}^n . You row reduce the corresponding matrix to row echelon form to get matrices below. Fill out the columns of the following table. For the last column, indicate whether, for any $\mathbf{b} \in \mathcal{R}^n$, whether matrix equation might have 0 solutions, exactly 1 solution, or an infinite number of solutions. One or more choices might be possible.

Echelon form	m	n	Linearly Independent?	Spans \mathcal{R}^n ?	$A\mathbf{x} = \mathbf{b}$
$\begin{bmatrix} X & X & X \\ 0 & X & X \\ 0 & 0 & X \end{bmatrix}$					
$\begin{bmatrix} X & X & X \\ 0 & X & X \\ 0 & 0 & 0 \end{bmatrix}$					
$\begin{bmatrix} X & X & X \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$					
$\begin{bmatrix} X & X & 0 \\ 0 & X & 0 \\ 0 & 0 & X \end{bmatrix}$					
$\begin{bmatrix} X & X & X \\ 0 & X & X \\ 0 & 0 & X \\ 0 & 0 & 0 \end{bmatrix}$					
$\begin{bmatrix} X & X & X \\ 0 & X & X \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$					
$\begin{bmatrix} X & X & X & X & X \\ 0 & X & X & X & X \\ 0 & 0 & X & X & X \end{bmatrix}$					
$\begin{bmatrix} X & X & X & X & X \\ 0 & X & X & X & X \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$					
$\begin{bmatrix} X & 0 \\ 0 & X \end{bmatrix}$					
$\begin{bmatrix} X & 0 \\ 0 & 0 \end{bmatrix}$					
$\begin{bmatrix} X & X \\ 0 & X \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \\ 0 & 0 \end{bmatrix}$					