2.3: Matrix invertibility MA322-001 Feb 14 Worksheet

How are pivots related to linearly independent columns?

How are linearly dependent columns related to $A\vec{x} = 0$?

How is $A\vec{x} = 0$ (with $\vec{x}$ and 0 vectors) related to $AX = 0$ (with X and 0 matrices)?

How is $AX = 0$ related to $BA = I$ with I the identity matrix?

How are pivots related to linearly independent rows?

How are linear depdendent rows related to $A\vec{x} = \vec{b}$?

How is $A\vec{x} = \vec{b}$ related to $AB = I$ with I the identity matrix?

How is $AB = I$ related to the span of the columns of A?

For a square matrix A how is $A\vec{x} = \vec{b}$ related to having linearly indepdent columns whose span is all of $\mathbb{R}^n$?

How is $AX = I$ related to that?

How is $BA = I$ related to that?

How are B and X related if A is square?

MA322-001 Feb 14 Quiz Name:_____

2.2.1(HW2.2#1) Find a matrix X such that $AX = I$ where $A = \begin{bmatrix} 8 & 6 \\ 5 & 4 \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

2.2.2 (a) Find a vector $\vec{c}$ such that $I\vec{c} = \begin{bmatrix} 2 \\ -1 \end{bmatrix}$

(a) What is $X\vec{c}$?

2.2.3 (HW2.2#5) Find the solution to $\begin{cases} 8x_1 + 6x_2 = 2 \\ 5x_1 + 4x_2 = -1 \end{cases}$

2.2.3 (HW2.2#33) Find the inverse of $\begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 1 & 1 & 0 & 0 & 0 \\ 1 & 1 & 1 & 0 & 0 \\ 1 & 1 & 1 & 1 & 0 \\ 1 & 1 & 1 & 1 & 1 \end{bmatrix}$

2.3.1 Find a matrix with 2 rows and 4 columns with linearly independent rows, and linearly dependent columns.