

HOMEWORK 5

DUE WEDNESDAY, FEBRUARY 11

FROM JACOB:

Section 5.2 — #12

Section 5.3 — #1; #2; #4 a; #5; #7; Group project - the uniqueness of reduced row echelon form.

NOT FROM JACOB:

1. Find a linearly independent subset of the following vectors that has the same span.

$$\begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}, \begin{pmatrix} -1 \\ 2 \\ -3 \end{pmatrix}, \begin{pmatrix} 4 \\ 1 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ 2 \\ -3 \end{pmatrix}, \begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix}$$

2. Suppose that you have a system of linear equations that can be expressed as the matrix equation $A\vec{x} = \vec{v}$, and that the minimal number of parameters needed to represent the solution set is four. Suppose furthermore that the image of A has dimension 3. How many variables are there in the original system of linear equations? Can you tell how many equations were in our original system, or does it depend on the situation?