

Quiz 1

1. (5 points) Consider the augmented matrix $\left(\begin{array}{ccccc|c} 1 & 2 & -1 & -1 & -5 & 0 \\ 2 & 4 & -1 & 2 & -5 & 0 \\ -1 & -2 & 0 & -3 & 0 & 0 \end{array} \right)$. Give:
- the number of pivot columns for the matrix,
 - the number of free variables for the corresponding linear system, and
 - the solution to the corresponding linear system.

2. (5 points) Do there exist values for x_1 , x_2 , and x_3 which solve the following equation?

$$x_1 \begin{pmatrix} 1 \\ 1 \\ 2 \end{pmatrix} + x_2 \begin{pmatrix} -1 \\ 1 \\ -1 \end{pmatrix} + x_3 \begin{pmatrix} -1 \\ 5 \\ 1 \end{pmatrix} = \begin{pmatrix} 3 \\ 1 \\ 6 \end{pmatrix}$$

(For fun) For some 3×5 matrix A , the solution set to $A\vec{x} = \vec{0}$ is $\text{Span}\{\vec{u}, \vec{v}\}$, with $\vec{u}, \vec{v} \in \mathbb{R}^5$. Do the columns of A span \mathbb{R}^3 ?