

MATH 205: Quiz 1 Show your work.

Name:

1. Consider the following matrix in reduced row echelon form (RREF).

$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

- (a) If the above matrix is a **coefficient matrix** for a system of equations, then what can you say about the solution of the system? (ie. Will it have a solution? One? Infinitely many? Any restrictions on what the augmented column could be?)

- (b) If the above matrix is an **augmented matrix** for a system of equations, then what can you say about the solution of the system?

2. Consider the following vectors.

$$\vec{v}_1 = \begin{bmatrix} 1 \\ 2 \\ 0 \end{bmatrix}, \vec{v}_2 = \begin{bmatrix} 0 \\ 1 \\ 1 \end{bmatrix}$$

- (a) Give two vectors (besides  $\vec{v}_1$  and  $\vec{v}_2$ ) that are in the  $\text{Span}\{\vec{v}_1, \vec{v}_2\}$ . Show your work.

- (b) For what values of  $h$  is  $\vec{y} = \begin{bmatrix} 1 \\ h \\ 4 \end{bmatrix}$  a linear combination of  $\vec{v}_1$  and  $\vec{v}_2$ ? Show your work.