Name: _____

ID #: _____

Quiz 2 (1:00 - 2:00)

1. Determine all real value(s) of h for which the following vectors are linearly independent. Show work to justify your answer

$$\begin{pmatrix} -1 \\ 5 \\ h \end{pmatrix}, \begin{pmatrix} 1 \\ -1 \\ 4 \end{pmatrix}, \begin{pmatrix} 3 \\ -5 \\ 7 \end{pmatrix}$$

2. Find a nonzero (meaning at least one nonzero entry) 1×3 matrix A for which the solutions of $A\mathbf{x} = 0$ are given (in parametric vector form) by

$$\mathbf{x} = t \begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix} + s \begin{pmatrix} 1 \\ 2 \\ 0 \end{pmatrix}$$

3. Write the vector

$$\begin{pmatrix} -2 \\ 2 \\ 9 \end{pmatrix}$$

as a linear combination of the vectors

$$\begin{pmatrix} 1 \\ 0 \\ -2 \end{pmatrix}, \begin{pmatrix} 2 \\ 1 \\ -4 \end{pmatrix}, \begin{pmatrix} 4 \\ 5 \\ -3 \end{pmatrix}$$

or explain why it is impossible to do so.