Math 54: Quiz #2

February 2

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Name: _____

Please give neat and organized answers. Whenever applicable (especially for computational questions), make it clear what strategy you are using.

Problem 1

Let

$$A = \begin{bmatrix} 1 & 2 & 1 \\ -3 & -1 & 2 \\ 0 & 5 & 3 \end{bmatrix}.$$

Do the columns of A span $\mathbb{R}^3$?

Problem 2

Let

$$\mathbf{v}_1 = \begin{bmatrix} 1 \\ 2 \\ 1 \end{bmatrix}, \ \mathbf{v}_2 = \begin{bmatrix} 2 \\ 2 \\ 2 \end{bmatrix}, \ \mathbf{v}_3 = \begin{bmatrix} -4 \\ -2 \\ h \end{bmatrix}.$$

(a) For what values of h is $\mathbf{v}_3$ in $\text{Span}\{\mathbf{v}_1, \mathbf{v}_2\}$?

(b) For what values of h is $\{\mathbf{v}_1, \mathbf{v}_2, \mathbf{v}_3\}$ linearly dependent?