# Linear - Quiz 2

**Name:** _____

1. (4 points) Let $\mathbf{u}=\begin{bmatrix}3\\-2\end{bmatrix}$ and $\mathbf{v}=\begin{bmatrix}3\\2\end{bmatrix}$. Show that $\begin{bmatrix}a\\b\end{bmatrix}$ is in Span$\{\mathbf{u},\mathbf{v}\}$ for all $a$ and $b$.

2. (2 points) Construct a $4\times 4$ matrix, <u>not</u> in echelon form, whose columns span $\mathbb{R}^4$. Show that the matrix you construct has the desired property. Hint: Keep it simple, but not in echelon form.

3. (4 points) Let $v_1 = \begin{bmatrix} 1 \\ 0 \\ -1 \\ 0 \end{bmatrix}$, $v_2 = \begin{bmatrix} 0 \\ -1 \\ 0 \\ 1 \end{bmatrix}$ and $v_3 = \begin{bmatrix} 1 \\ 0 \\ 0 \\ -1 \end{bmatrix}$. Does $\{v_1, v_2, v_3\}$ span $\mathbb{R}^4$? Why or why not?