Quiz 2, Linear

Dr. Adam Graham-Squire, Fall 2017

Name: _____

1. (4 points) Is the vector $\begin{bmatrix} 2 \\ -1 \\ 6 \end{bmatrix}$ a linear combination of the vectors $\begin{bmatrix} 1 \\ -2 \\ 0 \end{bmatrix}$, $\begin{bmatrix} 0 \\ 1 \\ 2 \end{bmatrix}$, and $\begin{bmatrix} 5 \\ -6 \\ 8 \end{bmatrix}$? Show your work or explain your reasoning.

2. (3 points) Let $\mathbf{u} = \begin{bmatrix} 5 \\ -1 \end{bmatrix}$ and $\mathbf{v} = \begin{bmatrix} 5 \\ 1 \end{bmatrix}$. Show that $\begin{bmatrix} h \\ k \end{bmatrix}$ is in $\text{Span}\{\mathbf{u}, \mathbf{v}\}$ for all h and k.

3. (3 points) Let A be a 4×3 matrix. Explain why the equation $A\mathbf{x} = \mathbf{b}$ cannot be consistent for all $\mathbf{b}$ in $\mathbb{R}^4$.