Quiz 8, Linear

Name: _____

1. (5 points) Find the coordinate vector $[\mathbf{x}]_{\mathcal{B}}$ of $\mathbf{x} = \begin{bmatrix} 8 \\ 9 \\ -4 \end{bmatrix}$ relative to the basis

$$\mathcal{B} = \left\{ \begin{bmatrix} 1 \\ -1 \\ -3 \end{bmatrix}, \begin{bmatrix} -3 \\ 4 \\ 9 \end{bmatrix}, \begin{bmatrix} 2 \\ -2 \\ 4 \end{bmatrix} \right\}.$$

2. (5 points) Suppose $\mathbb{R}^4 = \text{Span}\{\mathbf{v}_1, \ldots, \mathbf{v}_4\}$. *Use the definition of basis*, as well as the Invertible Matrix Theorem, to explain why $\{\mathbf{v}_1, \ldots, \mathbf{v}_4\}$ is a basis for $\mathbb{R}^4$.