

Name: _____

Directions: Show all work. No credit for answers without work.

1. **[5 points]** Determine whether $\left\{ \begin{bmatrix} 2 \\ 2 \\ -1 \\ -1 \end{bmatrix}, \begin{bmatrix} 2 \\ 5 \\ -5 \\ 1 \end{bmatrix}, \begin{bmatrix} 6 \\ -3 \\ 9 \\ -9 \end{bmatrix} \right\}$ is linearly independent in \mathbb{R}^4 .

2. **[5 points]** Determine whether $\left\{ \begin{bmatrix} 1 \\ -5 \\ 3 \\ -2 \end{bmatrix}, \begin{bmatrix} 2 \\ 1 \\ -5 \\ 1 \end{bmatrix}, \begin{bmatrix} 1 \\ 1 \\ -1 \\ 1 \end{bmatrix}, \begin{bmatrix} 1 \\ 1 \\ 1 \\ -1 \end{bmatrix} \right\}$ is a base for \mathbb{R}^4 .