

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  $\mathbb{R}^4$ .