

HOMEWORK 7-PART A

1. (1) Determine whether the following vectors are linear dependent or not?

$$v_1 = \begin{pmatrix} -1 \\ 7 \\ 7 \end{pmatrix}, v_2 = \begin{pmatrix} -3 \\ 8 \\ -4 \end{pmatrix}, v_3 = \begin{pmatrix} -4 \\ -4 \\ 2 \end{pmatrix}.$$

(2) Determine whether $v = \begin{pmatrix} -1 \\ 2 \\ 4 \end{pmatrix} \in \text{Span}(v_1, v_2, v_3)$.

2. (1) Determine whether the following vectors are linearly dependent or

not? $v_1 = \begin{pmatrix} -8 \\ 9 \\ -6 \\ 1 \end{pmatrix}, v_2 = \begin{pmatrix} -2 \\ 0 \\ 7 \\ 2 \end{pmatrix}, v_3 = \begin{pmatrix} 0 \\ -18 \\ 4 \\ 0 \end{pmatrix},$

(2) Determine whether $v = \begin{pmatrix} -1 \\ 2 \\ 4 \\ 2 \end{pmatrix} \in \text{Span}(v_1, v_2, v_3)$.

3. Let $v_1 = \begin{pmatrix} 0 \\ -1 \\ -2 \end{pmatrix}, v_2 = \begin{pmatrix} -2 \\ 1 \\ -4 \end{pmatrix}, v_3 = \begin{pmatrix} -2 \\ -2 \\ 0 \end{pmatrix},$

show that $\text{Span}(v_1, v_2, v_3) = \mathbb{R}^3$.