

1. 請框出答案.
2. 不可使用手機、計算器，禁止作弊!
3. 請自備白紙書寫，作答完畢請拍照上傳 Googld Classroom
4. 照片請清晰並轉正

1. Determine whether the vector \vec{b} is in the span of the vectors \vec{v}_i . If so, write \vec{b} into the linear combination form.

p.s. Please solve the problem with the corresponding augmented matrix. Also mark the row-echlon form and reduced row-echlon form of the augmented matrix.

$$\vec{b} = \begin{bmatrix} 6 \\ 16 \\ 14 \end{bmatrix}, \vec{v}_1 = \begin{bmatrix} 1 \\ 3 \\ 2 \end{bmatrix}, \vec{v}_2 = \begin{bmatrix} -2 \\ -2 \\ -9 \end{bmatrix}, \vec{v}_3 = \begin{bmatrix} 1 \\ 5 \\ -1 \end{bmatrix}$$

augmented matrix:
$$\left[\begin{array}{cccc} 1 & -2 & 1 & 6 \\ 3 & -2 & 5 & 16 \\ 2 & -9 & -1 & 14 \end{array} \right]$$

reduced row-echlon form:
$$\left[\begin{array}{cccc} 1 & 0 & 0 & 3 \\ 0 & 1 & 0 & -1 \\ 0 & 0 & 1 & 1 \end{array} \right]$$

Yes!

$$\vec{b} = 3 \cdot \vec{v}_1 - \cdot \vec{v}_2 + \vec{v}_3$$

$$\begin{bmatrix} 6 \\ 16 \\ 14 \end{bmatrix} = 3 \cdot \begin{bmatrix} 1 \\ 3 \\ 2 \end{bmatrix} - \cdot \begin{bmatrix} -2 \\ -2 \\ -9 \end{bmatrix} + \begin{bmatrix} 1 \\ 5 \\ -1 \end{bmatrix}$$