NOV 1, 2021

(2) Set = $\left\{ \begin{bmatrix} 2 \\ -1 \\ 5 \end{bmatrix}, \begin{bmatrix} -1 \\ 3 \\ 4 \end{bmatrix}, \begin{bmatrix} 7 \\ -6 \\ 11 \end{bmatrix} \right\}$

$v_1 \quad v_2 \quad v_3$

$A = [v_1 \; v_2 \; v_3] = \begin{bmatrix} 2 & -1 & 7 \\ -1 & 3 & -6 \\ 5 & 4 & 11 \end{bmatrix}$

$\text{rref}(A) = \begin{bmatrix} \textcircled{1} & 0 & 3 \\ 0 & \textcircled{1} & -1 \\ 0 & 0 & 0 \end{bmatrix}$ 2 pivots.

~~Hence v_1, v_2 are sufficient to span all of R^3~~

v_3 is linearly dependent of vectors v_1 & v_2

$v_3 = 3v_1 - v_2$

Hence rank(A) $\neq 3$, hence the set of vectors cannot span $\mathbb{R}^3$.

We need rank 3 for spanning all of R^3, else not possible.