

1. If possible, express \vec{b} as a linear combination of \vec{a}_1 and \vec{a}_2 .

$$\vec{a}_1 = \begin{bmatrix} -2 \\ 5 \end{bmatrix}, \quad \vec{a}_2 = \begin{bmatrix} 7 \\ -3 \end{bmatrix}, \quad \vec{b} = \begin{bmatrix} 8 \\ 9 \end{bmatrix}$$

2. Determine if the columns of $A = \begin{bmatrix} 1 & 3 & 4 \\ 1 & 4 & 6 \\ 2 & -1 & -6 \end{bmatrix}$ span \mathbb{R}^3 . If they don't, find a vector outside their span.