
Span

Gene Quinn

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Suppose we have two vectors

$$\vec{v}_1 = \begin{bmatrix} 1 \\ 2 \\ 0 \end{bmatrix} \quad \text{and} \quad \vec{v}_2 = \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}$$

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The **span** of $\{\vec{v}_1, \vec{v}_2\}$ is defined to be the set of all vectors that are linear combinations of \vec{v}_1 and \vec{v}_2 :

$$\text{span}\{\vec{v}_1, \vec{v}_2\} = \{\vec{u} \in \mathbb{R}^3 : \vec{u} = c_1\vec{v}_1 + c_2\vec{v}_2, c_1, c_2 \in \mathbb{R}\}$$