

Source: [KBe20math530refVectorSpace](#)

1 | #definition span

The set of all linear combinations of a list of vectors v_1, \dots, v_m in V is called the span of v_1, \dots, v_m , denoted $\text{span}(v_1, \dots, v_m)$:

$$\text{span}(v_1, \dots, v_m) = \{a_1 v_1 + \dots + a_m v_m \mid a_1, \dots, a_m \in F\}$$

And the span of an empty list $()$ is 0

2 | Properties

- The span is the smallest containing subspace
 - The span of a list of vectors in V is the smallest subspace of V containing all the vectors in the list.

#definition spans

If $\text{span}(v_1, \dots, v_m) = V$, then v_1, \dots, v_m **spans** V

3 | Examples

Axler 2.9
