

What is a linear combination of
 v_1, \dots, v_n ?

What is the name for the scalars
multiplying the vectors in a linear
combination?

When is a linear combination

$$\alpha_1 v_1 + \dots + \alpha_n v_n$$

also an affine combination?

What is an affine space?

What conditions ensure that \mathcal{V} is a
vector space?

Coefficients

$$\alpha_1 \mathbf{v}_1 + \cdots + \alpha_n \mathbf{v}_n$$

The set $\mathbf{a} + \mathcal{V}$ where \mathcal{V} is a vector space.

When $\alpha_1 + \cdots + \alpha_n = 1$

V1: \mathcal{V} contains the zero vector,

V2: For every vector \mathbf{v} , if \mathcal{V} contains \mathbf{v} then it contains $\alpha \mathbf{v}$ for every scalar α , is closed under scalar-vector multiplication, and

V3: For every pair \mathbf{u} and \mathbf{v} of vectors, if \mathcal{V} contains \mathbf{u} and \mathbf{v} then it contains $\mathbf{u} + \mathbf{v}$.