



## Barycentric Coordinates

### 1 Why

TODO

### 2 Defining Result

**Proposition 1.** *If  $M = \mathbf{aff}\{b_0, b_1, \dots, b_m\}$  then for each  $x \in M$  there exists  $(\lambda_i)$  such that*

$$x = \lambda_0 b_0 + \lambda_1 b_1 + \dots + \lambda_m b_m$$

*with  $\sum_i \lambda_i = 1$ . The  $(\lambda_i)$  are unique if the set of vectors is affinely independent.*

The *barycentric coordinates* for a vector  $x$  in the affine hull of a set of affinely independent vectors is the sequence of unique coefficients expressing the vector as an affine combination of the set of vectors.

