

## N-DIMENSIONAL LINE SEGMENTS

## Definition

The closed line segment between two points in n-dimensional space is the set of points which can be expressed as the sum of the first point and a scalar multiple of the difference between the second point and the first; where the scalar is in the interval [0,1]. Thus, the closed line segment between two points is a subset of the line though the two points. The open line segment between x and y is the closed line segment with the points x and y.

## Notation

The closed line segment between  $x, y \in \mathbb{R}^n$  is the set

$$\{z \in \mathbf{R}^n \mid z = x + a(y - x), 0 \le a \le 1, x, y \in \mathbf{R}^n\}.$$

Notice that x + a(y - x) = (1 - a)x + ay.

