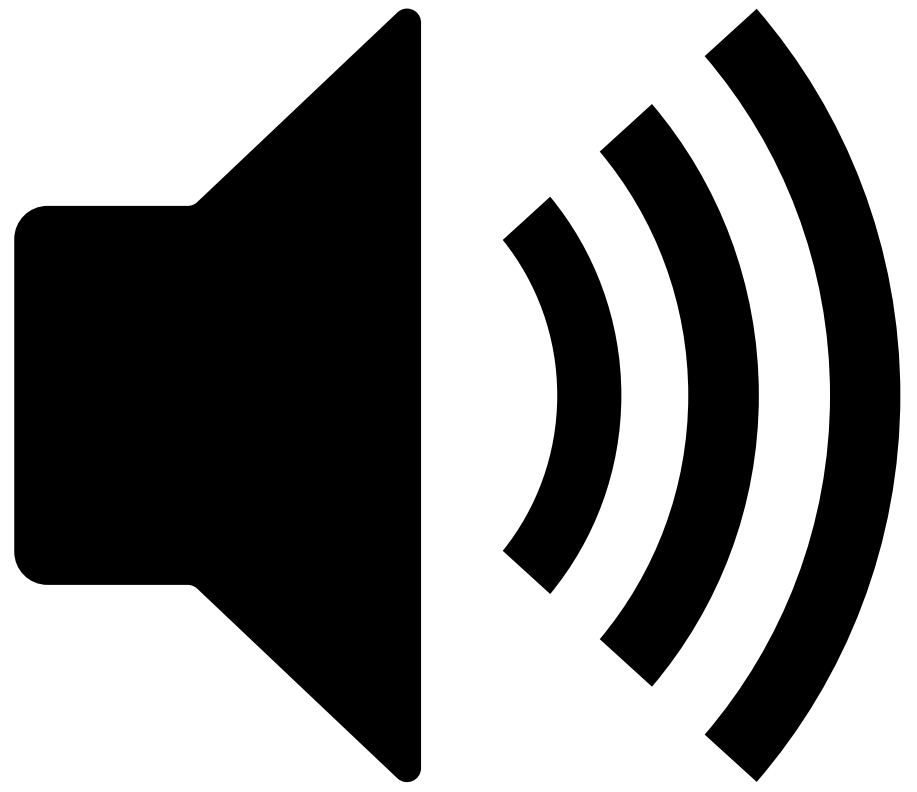
Originally introduced by greek mathematicians, in particular, Euclid of Alexandria, for modelling the physical universe.

Mathematically, Euclidean space is represented using R^n, where R stands for the set of Real numbers, and n stands for the number of dimensions.

For two dimensional space, Euclidean space can be expressed as RxR, or R^2.

Example: Let's say we denote each set (for each dimension) by Z', where Z' = {-3, -2, -1, 0, 1, 2, 3}, then such a two-dimensional space can be represented as the cross product of Z' with Z', which can be given by all possible points in that space and those will be

Euclidean space



$$\{\{-3,-3\},\ \{-3,-2\},\ \ldots\ \{-3,2\},\ \{-3,3\},$$

$$\{-2,-3\},\ \{-2,-2\},\ \ldots\ \{-2,2\},\ \{-2,3\},$$

$$\vdots\quad \vdots\qquad \vdots\quad \vdots\quad \ldots\qquad \vdots\quad \vdots\qquad \vdots\quad \vdots$$

$$\{3,-3\},\ \{3,-2\},\ \ldots\ \{3,2\},\ \{3,3\}\}$$

Euclidean space

Originally introduced by greek mathematicians, in particular, Euclid of Alexandria, for modelling the physical universe.

Mathematically, Euclidean space is represented using R^n, where R stands for the set of Real numbers, and n stands for the number of dimensions.

For two dimensional space, Euclidean space can be expressed as RxR, or R^2.

Example: Let's say we denote each set (for each dimension) by Z', where Z' = {-3, -2, -1, 0, 1, 2, 3}, then such a two-dimensional space can be represented as the cross product of Z' with Z', which can be given by all possible points in that space and those will be

{{-3, -3}, {-3, -2}, … {-3, 2}, {-3, 3},

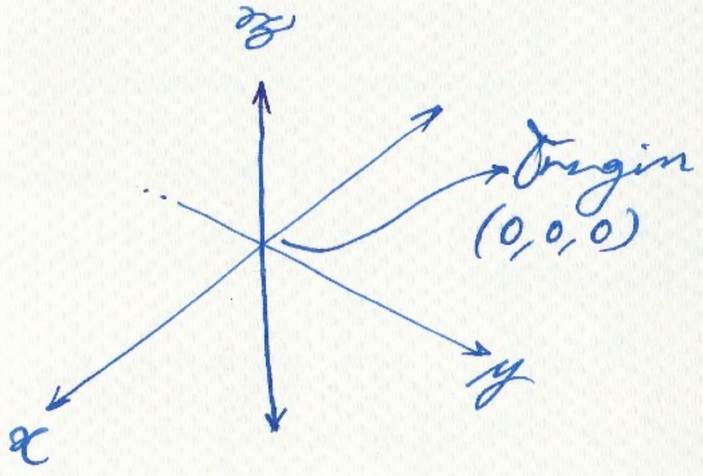
{-2, -3}, {-2, -2}, … {-2, 2}, {-2, 3},

: : : : … : : : :

{ 3, -3}, {3, -2}, … {3, 2}, { 3, 3}}

$\mathbb{R}$: Set of Real numbers

$\{ \ldots, -3, -2, -2.5, 1, 0, 0.1, 1, \ldots \infty \}$



Three Dimensional Euclidean Space

$\mathbb{R} \times \mathbb{R} \times \mathbb{R} \times \ldots$ n times

OR

$\mathbb{R}^n$ — Number of Dimensions

Ex: 3d Euclidean space → $\mathbb{R}^3$