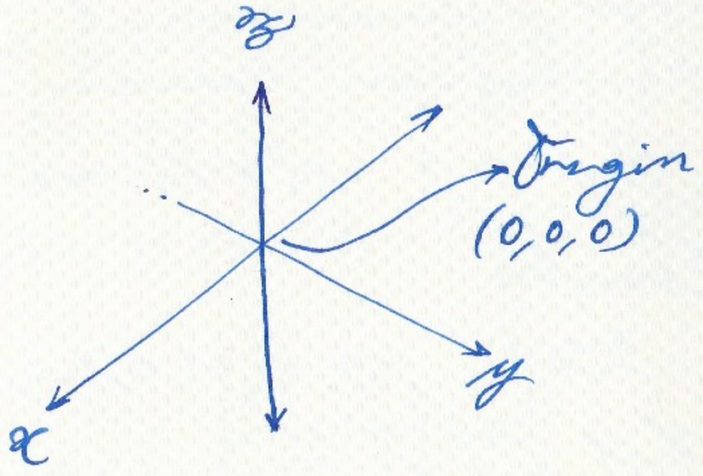
$\mathbb{R}$: Set of Real numbers

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



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 → $\mathbb{R}^3$

Cartesian Coordinate System

Remember I started with the idea of Euclidean space, this is indeed Euclidean space, but this specific system of locating points and eventually compound geometries in this Euclidean space is referred as Cartesian Coordinate System.

This was given by Rene Descartes in the 17th century, who was probably the first to link Euclidean geometry with Algebra.

What you commonly hear as x and y axes, is actually an integral aspect of Cartesian Coordinate System. Imagine Euclidean system to be the way of capturing locations of geometries as what we call in this context.

On a two-dimensional space, their locations can be mapped by finding its distance on x-axis and on y-axis. X and Y can be referred as two dimensions in this context. Note that these distances are called as abscissa and the ordinate, respectively for x and y, or simply coordinates.