Things to study:

- Point.
- Distance between points.
- Line.
- Plane.
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1 Linear algebra

Definition 1.1. *(Dot). is an abstract idea to represent a place on a nth dimension.*

On one dimension we can say that a dot is an $x \in S$ on which S is a set. Similarly on the two and three dimension we have:

$$(x, y) \in S^2,$$
$$(x, y, z) \in S^3,$$

In general we will be working from now on with the real numbers: $\mathbb{R}^n$, where n is the dimension.

1.1 Operations

Definition 1.2. *Addition (+) Given two points P_1 and P_2, we say that the addition of these two points will be equal to some other point. And it is represented as:*

$$P_1 + P_2 = P_3,$$

also a more general on nth dimension sum will be:

$$(x_1, y_1, z_1, \ldots, m_1) + (x_2, y_2, z_2, \ldots, m_2) = (x_1 + x_2, y_1 + y_2, z_1 + z_2, \ldots, m_1 + m_2)$$

Definition 1.3. *Dot Product ($\cdot$) Given two points P_1 and P_2, we say that the addition of these two points will be equal to some scalar k. Then*

$$P_1 = (x_1, y_1, z_1, \ldots, m_1), P_2 = (x_2, y_2, z_2, \ldots, m_2)$$

$$P_1 \cdot P_2 = P_3$$
$$(x_1, y_1, z_1, \ldots, m_1) \cdot (x_2, y_2, z_2, \ldots, m_2) = x_1x_2 + y_1y_2 + z_1z_2 + \cdots + m_1m_2$$

Definition 1.4. *Scalar product The scalar product is...*