What is Norm of a vector?

The magnitude or the length of a vector.

Let some vector

L-1 - Norm: =

L-2 – Norm:

For example, we say both their cartesian distance are 2:



https://www.youtube.com/watch?v=3i3klTnGZZM

Inner product (dot product) of vector

Formula:

Represented by or simply ignore.

Simulation: https://www.geogebra.org/m/Yu6869By

Let,

We know that if we want two vectors to be multiplied by each other,

they must satisfy (m rows by n column):

Where

So for ,

We can do , such that

IF is orthogonal

And then we have norm

If

We say is normalized.

If (doing inner product) such that, and , which means both of these two vectors are normalized and they are orthogonal. We say this set of vectors is orthonormal.

<https://www.youtube.com/watch?v=FCmH4MqbFGs>

Barycentric coordinate:

<https://www.geogebra.org/m/ZuvmPjmy>

[good source](https://www.scratchapixel.com/lessons/3d-basic-rendering/ray-tracing-rendering-a-triangle/barycentric-coordinates#:~:text=Barycentric%20coordinates%20are%20also%20known,A%2C%20B%2C%20C).)

Equation 1 defines the position of a point P on the plane of the triangle formed by the vertices A, B and C. The point is within the triangle (A, B, C) if 0≤u,v,w≤10≤u,v,w≤1. If any one of the coordinates is less than zero or greater than one, the point is outside the triangle. If any of them is zero, P is on one of the lines joining the vertices of the triangle.