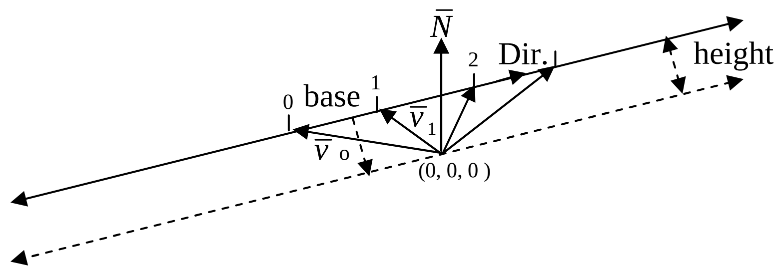
ASLEC Cipher – Shortest Distance Between the Two Orthogonal Skew Lines Being Used..

Lemma_1: The area of any triangle is ½ base x perpindicular height.

Lemma_2: The area of any triangle is ½ the magnitude of the cross product of two sides of the triangle..

I will use these facts to find the shortest distance between any pair of skew lines in the algorithm.



All the visible triangles that can be seen (and unseen) that are bounded by position vectors are all equal in area.

Let's say the direction vector is $(v_1 - \overline{v}_0)$

$\overline{N}$ is the defining normal vector of the plane that contains the entities' number line.

By lemma_1, area of each triangtle is $|(v_1 - \overline{v}_0)|$ x ½ x height

By lemma_2, area of each triangle is $|\overline{v}_1 \text{ x } \overline{v}_0|$ x ½

So height = $|\overline{v}_1 \text{ x } \overline{v}_0| \div |(v_1 - \overline{v}_0)$.

In words, Height $\equiv \dfrac{|\,normal\ vector\,|}{|\,direction\ vector\,|}$

Height is also the shortest distance between these two orthagonal lines.

In general.

The shortest distance between any two orthogonal lines such as these in my vector cryptography is ,

$$\frac{|\,normal\ vector\,|}{|\,direction\ vector\,|}$$
