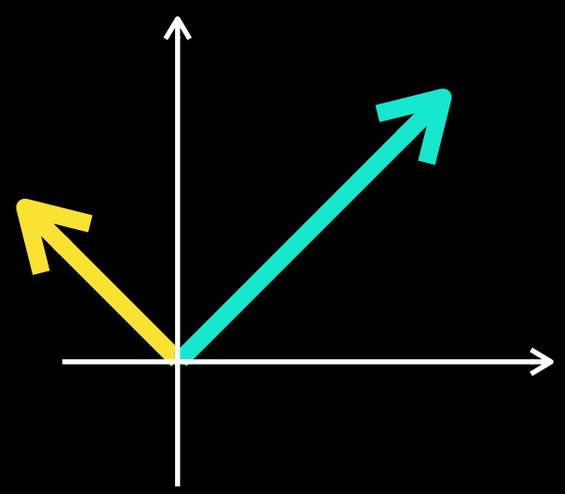
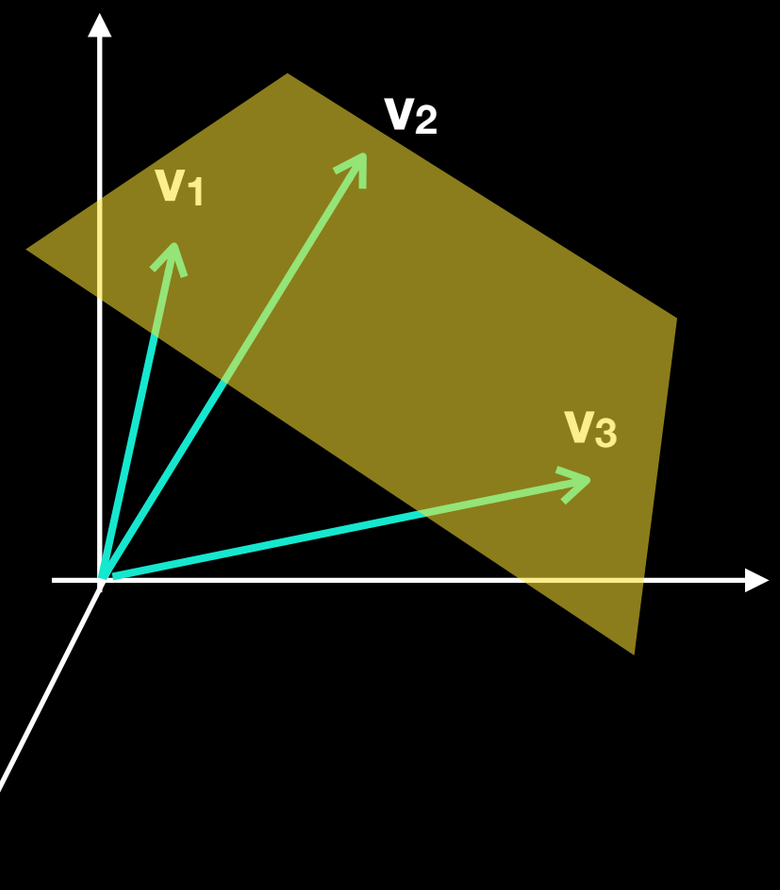
Plane equation (2)

Linear Algebra Essentials



Plane equation

$$v = \sum_i a_i \vec{v}_i \,, \qquad \sum_i a_i = 1$$

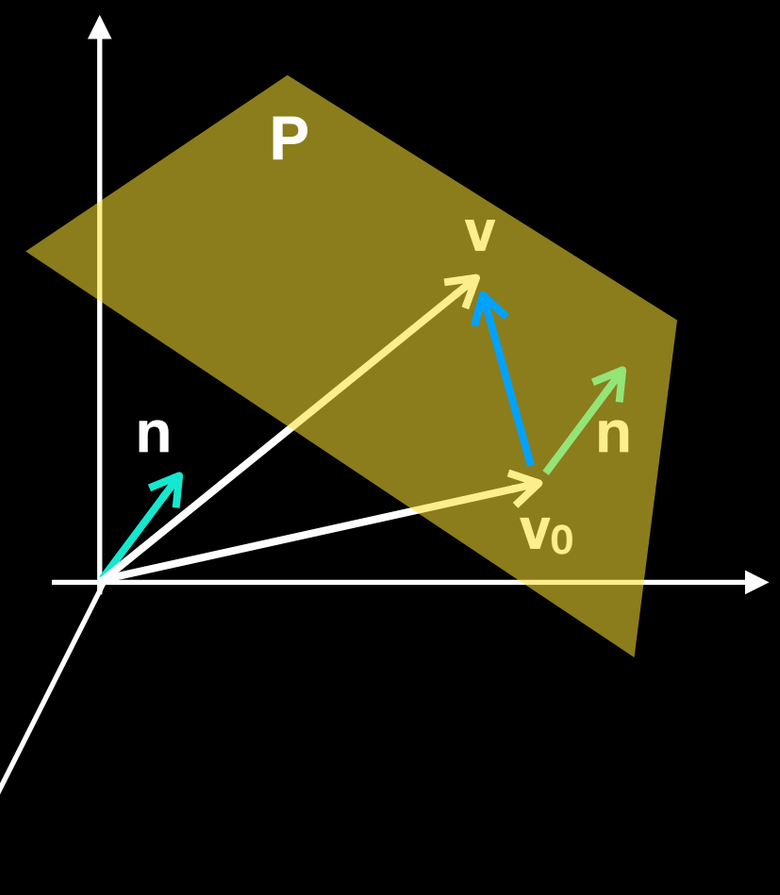


Plane equation

$\mathbf{v_0} \in \mathbf{P}$

n - normal vector

$$(\mathbf{v} - \mathbf{v_0}, \mathbf{n}) = 0$$



$$(\mathbf{v}, \mathbf{n}) - (\mathbf{v_0}, \mathbf{n}) = 0$$

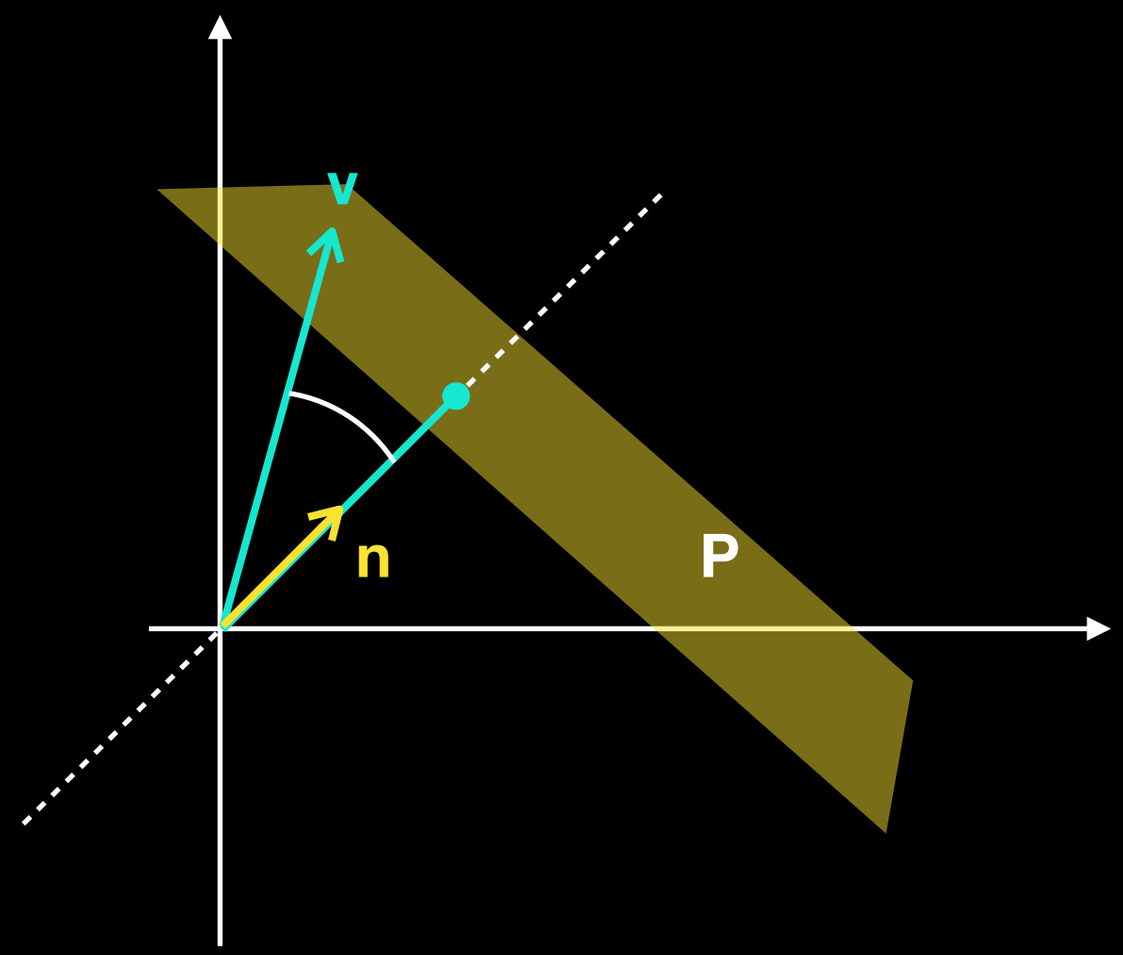
$$(\mathbf{v}, \mathbf{n}) = (\mathbf{v_0}, \mathbf{n}) = \lambda_0$$

(v, n) = const

$$(v, n) = \|v\| \cdot \|n\| \cdot cos(\alpha)$$

$$\|n\| = 1$$

$$(v, n) = \|v\| \cdot cos(\alpha)$$

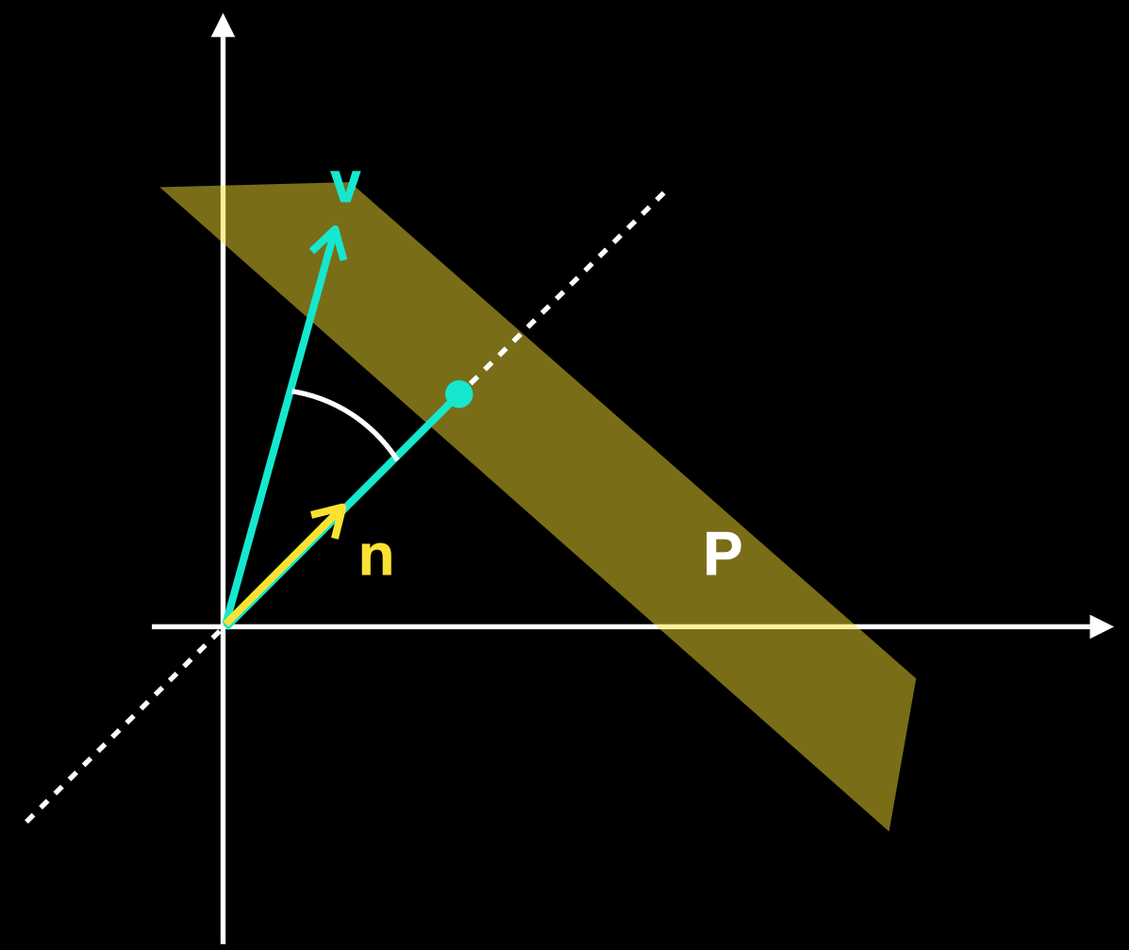


(v, n) - *distance from the origin*
(can be negative)

$$\|n\| = 1$$

(v, n) = distance

(v, n) > 0



$\|n\| = 1$

(v, n) = distance

(v, n) < 0