11/3/23

n-space

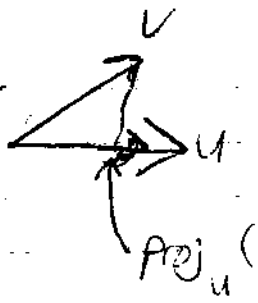
Define $\mathbb{R}^n$ ∈

If u is a unit vector and v is a vector

$\text{proj}_u(v) = (v \cdot u)u$

and if u is any vector

let $\hat{u} = \frac{u}{\|u\|}$ unit vector



define $\text{proj}_u(v) = \text{Proj}_{\hat{u}}(v)$

$= (v \cdot \frac{u}{\|u\|}) \frac{u}{\|u\|} = \frac{v \cdot u}{\|u\|^2} u$

Plane

$n \cdot X = C$

unit vector ← n

linear equation

C ← min distance of origin to the plane

Parametric form of a plane

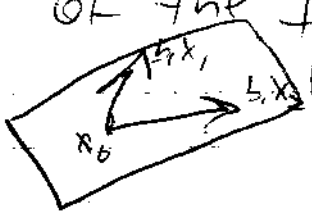
If x_0, x_1 and x_2 points on a plane P

let $b_1 = x_1 - x_0$

$b_2 = x_2 - x_0$

and if b_1 and b_2 are not collinear

then every point of the plane is of the form $x_0 + sb_1 + tb_2$



s, t are real numbers