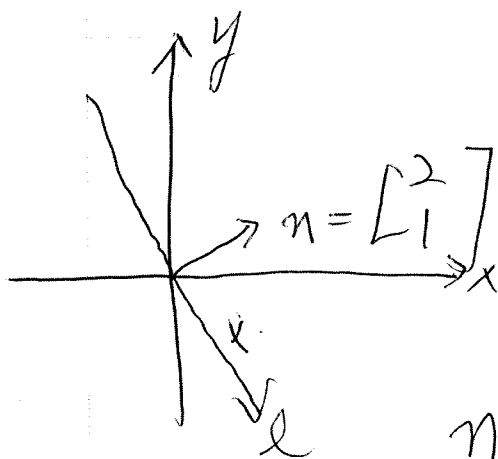ex) (a) $v = \begin{bmatrix} -1 \\ 3 \end{bmatrix}$, $u = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$

$$\text{proj}_u(v) = \frac{(u \cdot v)}{(u \cdot u)} u = \frac{1}{5} \begin{bmatrix} 2 \\ 1 \end{bmatrix} = \begin{bmatrix} 2/5 \\ 1/5 \end{bmatrix}$$

1.3 Lines and Planes

$n = \begin{bmatrix} 2 \\ 1 \end{bmatrix}$

$n \cdot x = 0$

n : normal vector to the line

or $x = t\vec{d}$, $\vec{d} = \begin{bmatrix} 1 \\ -2 \end{bmatrix}$

d : direction vector.