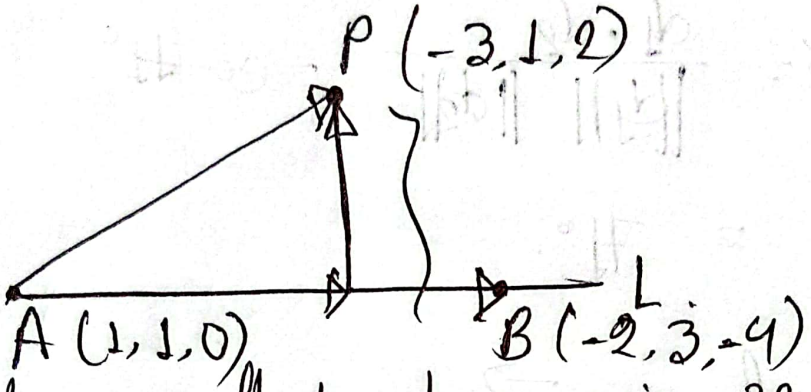
A B

33.



Use the method of exercise 32 to find the distance from the point $P(-3,1,2)$ to the line through $A(1,1,0)$ and $B(-2,3,-4)$.

$$\vec{AP} = -4i + 2k$$

$$\vec{AB} = -3i + 2j - 4k$$

(V.e) Q1

$$\text{Proj}_{\vec{AB}}\vec{AP} = \left(\vec{AP}\cdot\frac{\vec{AB}}{\|\vec{AB}\|}\right)\frac{\vec{AB}}{\|\vec{AB}\|}$$

$$= \left(\frac{\vec{AP}\cdot\vec{AB}}{\|\vec{AB}\|^2}\right)\cdot\vec{AB}$$

$$= \frac{12-8}{29}\cdot = \frac{4}{29}\cdot(-3i+2j-4k)$$

V- $\text{Proj}_{\vec{AB}}\vec{AP}$

$(-4i+2k)-$

$\left(-\frac{12}{29}i+\frac{8}{29}j-\frac{16}{29}k\right)$

$\left(-4+\frac{12}{29}\right)+\left(\frac{-8}{29}\right)^2+$

$\left(2+\frac{16}{29}\right)$