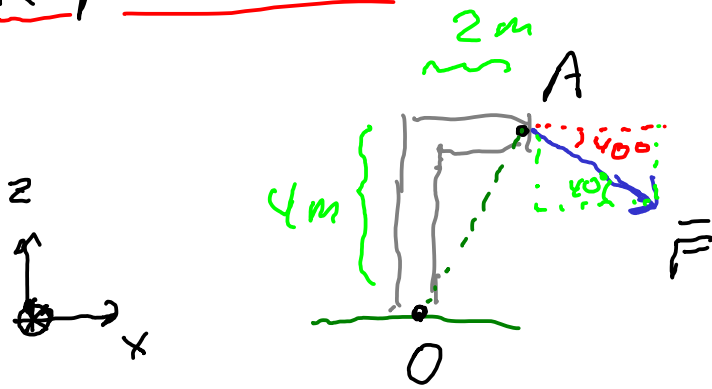


Rep. L3



$$\|\vec{F}\| = 600$$

$$\vec{OA} = \begin{bmatrix} 2 \\ 0 \\ 4 \end{bmatrix}$$

$$\vec{F} = \begin{bmatrix} 600 \cdot \cos 40^\circ \\ 0 \\ -600 \cdot \sin 40^\circ \end{bmatrix}$$

$$\vec{M} = \vec{OA} \times \vec{F} = \begin{bmatrix} 2 \\ 0 \\ 4 \end{bmatrix} \times \begin{bmatrix} 600 \cos 40 \\ 0 \\ -600 \sin 40 \end{bmatrix}$$

$$= \begin{bmatrix} 0 - 0 \\ -(2(-600) \cdot \sin 40 - 4 \cdot 600 \cos 40) \\ 0 - 0 \end{bmatrix}$$

$$= \begin{bmatrix} 0 \\ 1200 \sin 40 + 2400 \cos 40 \\ 0 \end{bmatrix}$$

$$\begin{aligned} \|\vec{M}\| &= 1200 \sin 40 + 2400 \cos 40 \\ &= 2609,85 \end{aligned}$$

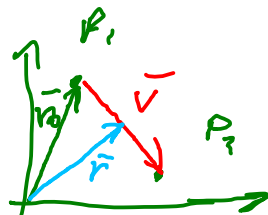
Ex: En linje passerar punkterna

$$P_1 = (1, 4) \quad P_2 = (3, 1)$$

Uttryck linjen

a) på vektorform, parameterform

$$\vec{r}_0 = \begin{bmatrix} 1 \\ 4 \end{bmatrix} \quad \vec{v} = \begin{bmatrix} 3 - 1 \\ 1 - 4 \end{bmatrix}$$



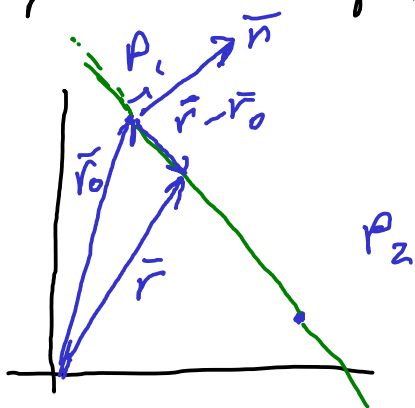
$$= \begin{bmatrix} 2 \\ -3 \end{bmatrix}$$

$$\vec{r} = \vec{r}_0 + t \cdot \vec{v}$$

$$\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 1 \\ 4 \end{bmatrix} + t \begin{bmatrix} 2 \\ -3 \end{bmatrix} \quad -\infty < t < \infty$$

$$\begin{cases} x = 1 + t \cdot 2 \\ y = 4 + t \cdot (-3) \end{cases}$$

b) på normalform



$$(\vec{r} - \vec{r}_0) \cdot \vec{n} = 0$$

$$\vec{r}_0 = \begin{bmatrix} 1 \\ 4 \end{bmatrix} \quad \vec{r} = \begin{bmatrix} x \\ y \end{bmatrix}$$

Linjens
riktning

$$\vec{v} = \begin{bmatrix} 2 \\ -3 \end{bmatrix} \quad \vec{n} = \begin{bmatrix} 3 \\ 2 \end{bmatrix}$$

$$\left(\begin{bmatrix} x \\ y \end{bmatrix} - \begin{bmatrix} 1 \\ 4 \end{bmatrix} \right) \cdot \begin{bmatrix} 3 \\ 2 \end{bmatrix} = 0$$

$$\begin{bmatrix} x-1 \\ y-4 \end{bmatrix} \cdot \begin{bmatrix} 3 \\ 2 \end{bmatrix} = 0$$

$$3(x-1) + 2(y-4) = 0$$

$$3x + 2y - 11 = 0$$

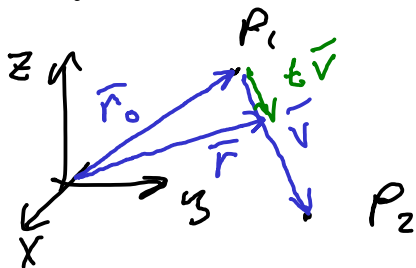
Ex: En linje passerar punkterna

$$P_1 = (1, 0, -3)$$

$$P_2 = (3, 1, -2)$$

Uttryck linjen

a) Pa vektorform, parameterform



$$\vec{r} = \vec{r}_0 + t \cdot \vec{v}$$

$$\vec{r} = \begin{bmatrix} x \\ y \\ z \end{bmatrix} \quad \vec{r}_0 = \begin{bmatrix} 1 \\ 0 \\ -3 \end{bmatrix}$$

$$\vec{v} = \begin{bmatrix} 3-1 \\ 1-0 \\ -2-(-3) \end{bmatrix} = \begin{bmatrix} 2 \\ 1 \\ 1 \end{bmatrix}$$

$$\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 1 \\ 0 \\ -3 \end{bmatrix} + t \cdot \begin{bmatrix} 2 \\ 1 \\ 1 \end{bmatrix} \quad -\infty < t < \infty$$

$$\begin{cases} x = 1 + t \cdot 2 \\ y = 0 + t \cdot 1 \\ z = -3 + t \cdot 1 \end{cases}$$

b) parameterfrei form

$$\cancel{L} \frac{x-1}{2} = \frac{y-0}{1} = \frac{z+3}{1}$$