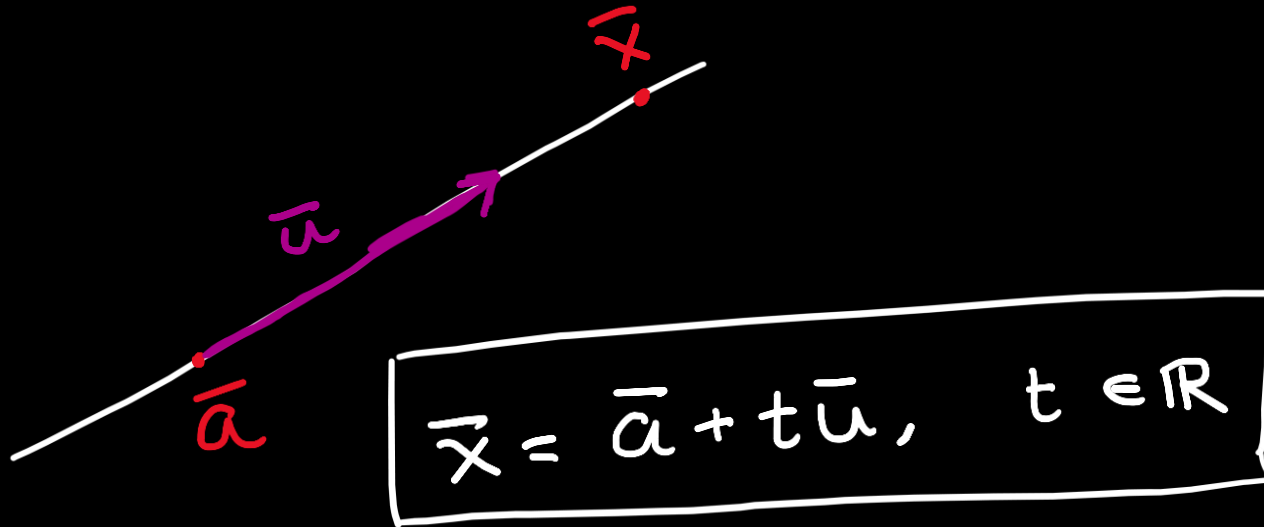
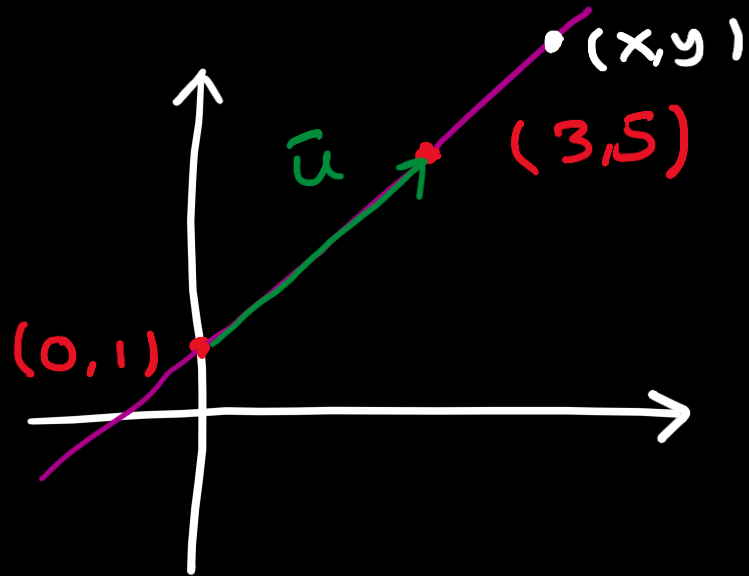


Linjär Algebra: Repetition om linjer och plan.

Linjer på parameterform:



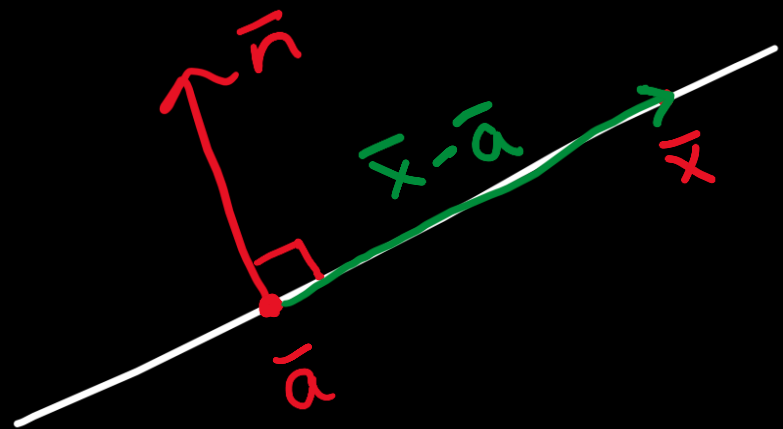
Exempel: linjen i planet som går genom punkterna $(0,1)$ och $(3,5)$:



$$\vec{u} = (3,5) - (0,1) = (3,4)$$

$$(x,y) = (0,1) + t(3,4) \quad , \quad t \in \mathbb{R}.$$

Linjer på normalform i planet:



$$\bar{n} \cdot (\bar{x} - \bar{a}) = 0$$
$$\Leftrightarrow \bar{n} \cdot \bar{x} = \bar{n} \cdot \bar{a}$$

$$\bar{n} = (a, b), \quad \bar{x} = (x, y), \quad \bar{n} \cdot \bar{a} = c$$

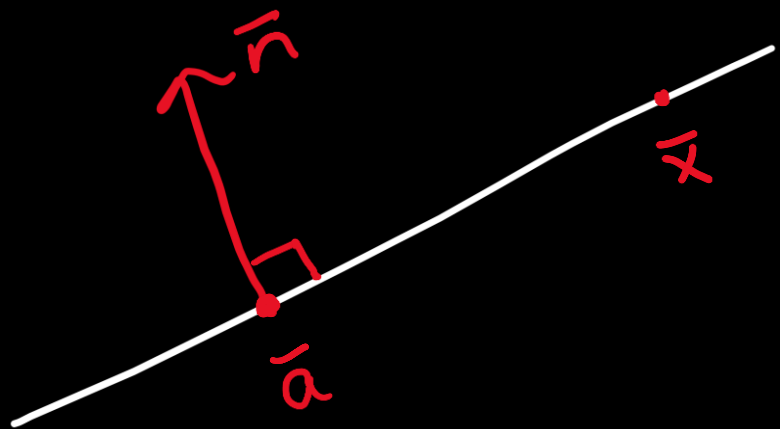
$$\underline{ax + by = c}$$

$$\bar{n} = (a, b)$$

$$(b \neq 0)$$

$$y = -\frac{a}{b}x + \frac{c}{b} = kx + m.$$

Linjer på normalform i planet:

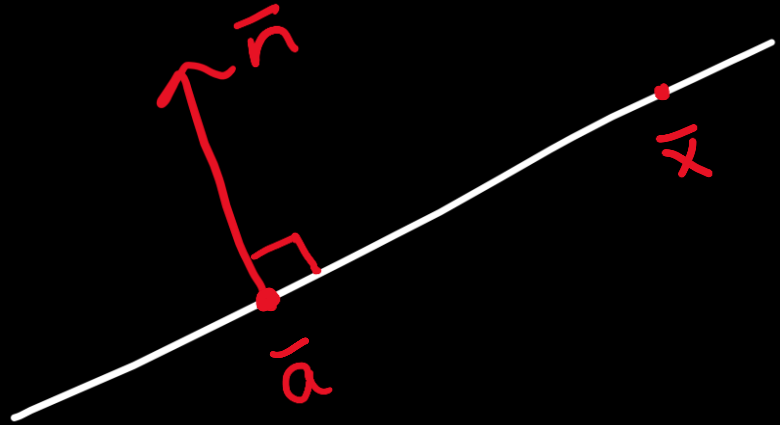


$$\vec{n} \cdot (\vec{x} - \vec{a}) = 0$$
$$\Leftrightarrow \vec{n} \cdot \vec{x} = \vec{n} \cdot \vec{a}$$

Om $\vec{n} = (a, b)$, $\vec{x} = (x, y)$, $\vec{n} \cdot \vec{a} = c$:

$$ax + by = c$$

Linjer på normalform i planet:



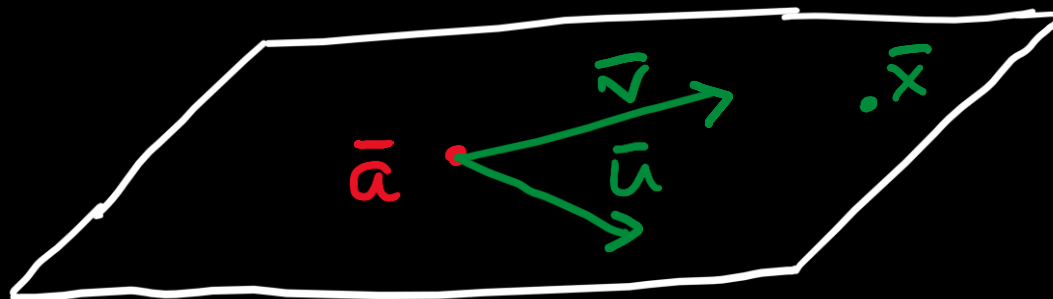
$$\vec{n} \cdot (\vec{x} - \vec{a}) = 0$$
$$\Leftrightarrow \vec{n} \cdot \vec{x} = \vec{n} \cdot \vec{a}$$

Om $\vec{n} = (a, b)$, $\vec{x} = (x, y)$, $\vec{n} \cdot \vec{a} = c$:

$$ax + by = c$$

$$(\Leftrightarrow | \text{om } b \neq 0 | \Leftrightarrow y = -\frac{a}{b}x + \frac{c}{b} = kx + m \dots)$$

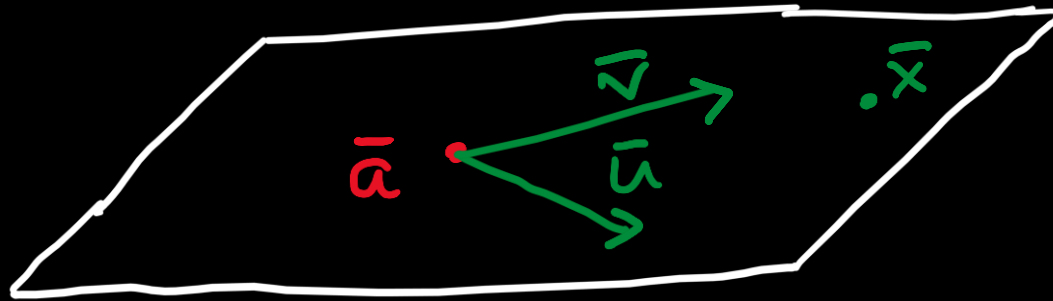
Plan på parameterform:



$$\bar{x} = \bar{a} + s\bar{u} + t\bar{v}, \quad s, t \in \mathbb{R}$$

$$(x, y, z) = (0, 1, -1) + s(2, 3, 0) + t(1, -1, 2)$$

Plan på parameterform:

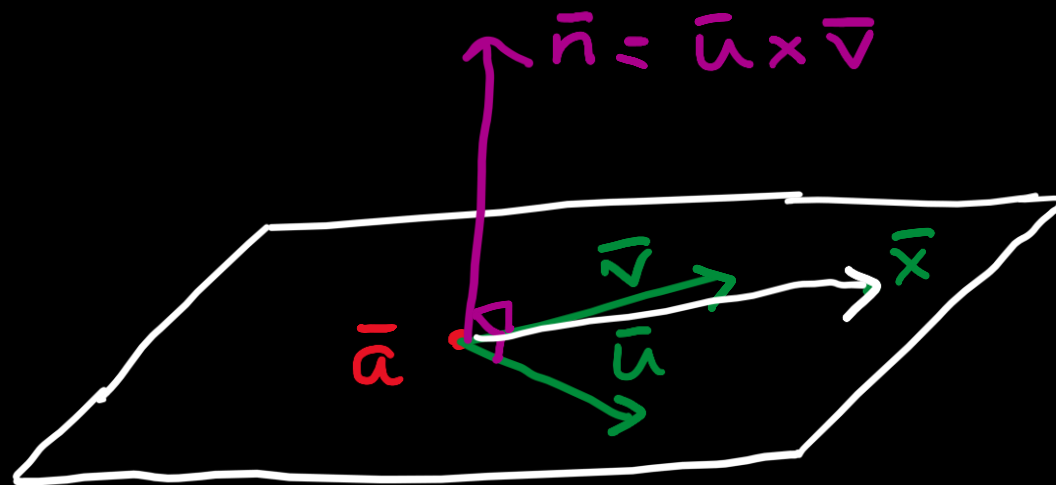


$$\bar{x} = \bar{a} + s\bar{u} + t\bar{v}, \quad s, t \in \mathbb{R}$$

T. ex.

$$(x, y, z) = (0, 1, -1) + s(2, 3, 0) + t(1, -1, 2)$$

Plan på normalform i tre dimensioner:



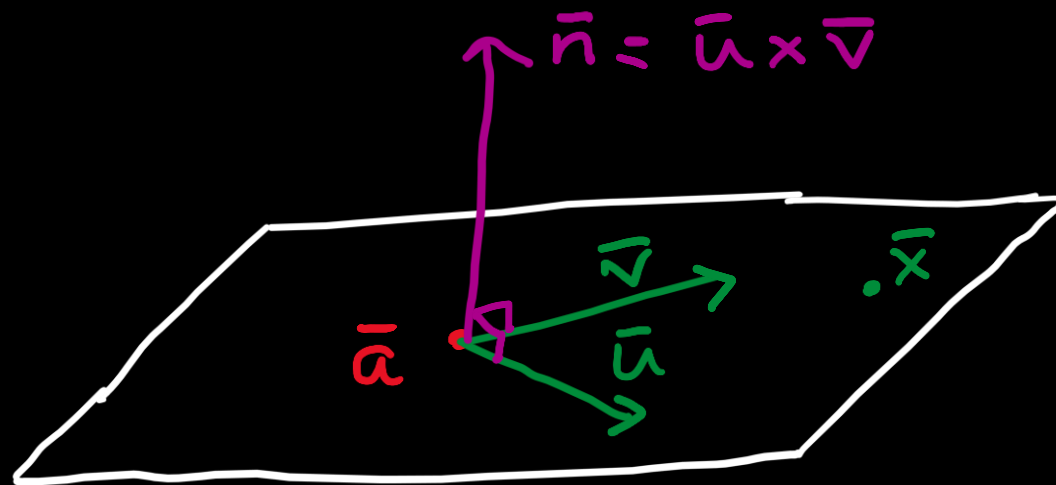
$$\bar{x} = \bar{a} + s\bar{u} + t\bar{v}, \quad s, t \in \mathbb{R}$$

$$\bar{n} \cdot (\bar{x} - \bar{a}) = 0$$

$$\bar{n} = (a, b, c), \quad \bar{x} = (x, y, z) \quad \bar{n} \cdot \bar{a} = d$$

$$\underline{ax + by + cz = d}$$

Plan på normalform i tre dimensioner:



$$\bar{x} = \bar{a} + s\bar{u} + t\bar{v}, \quad s, t \in \mathbb{R}$$

$$\bar{n} \cdot (\bar{x} - \bar{a}) = 0$$

Med $\bar{n} = (a, b, c)$, $\bar{x} = (x, y, z)$ $\bar{n} \cdot \bar{a} = d$:

$$ax + by + cz = d.$$