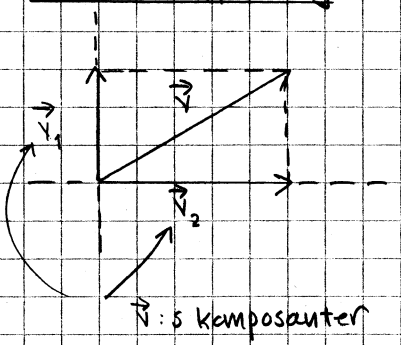
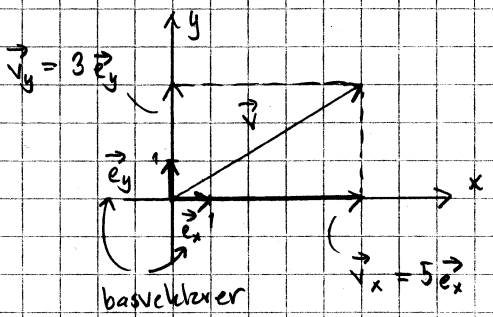
Mer om vektorer – komposanter, koordinater och vektorlängd

Komposantuppdelning



$\vec{v} = \vec{v}_1 + \vec{v}_2$

Basvektorer och koordinater



$\vec{v} = \vec{v}_x + \vec{v}_y$

$= 5\vec{e}_x + 3\vec{e}_y = (5, 3)$

vektorn $\vec{v}$:s koordinater m.a.p. basvektorerna $\vec{e}_x$ och $\vec{e}_y$

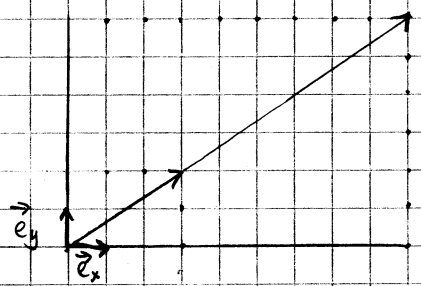
skrivsätt, betyder

Räknelagar för vektorer

Multiplikation med skalär (tal)

$$\boxed{k(x_1, y_1) = (kx_1, ky_1)}$$

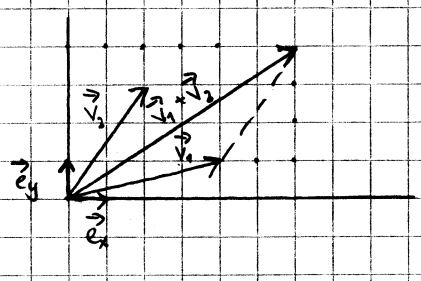
Ex: $3(3, 2) = (3 \cdot 3, 3 \cdot 2) = (9, 6)$



Addition

$$\boxed{(x_1, y_1) + (x_2, y_2) = (x_1 + x_2, y_1 + y_2)}$$

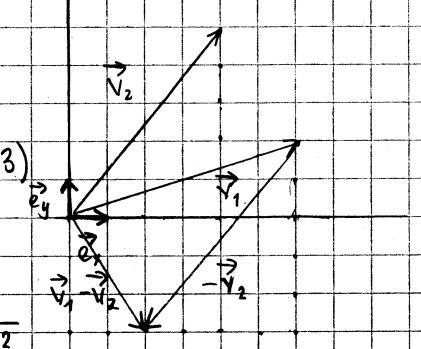
Ex: $(4, 1) + (2, 3) = (4 + 2, 1 + 3) = (6, 4)$



Subtraktion

$$\boxed{(x_1, y_1) - (x_2, y_2) = (x_1 + x_2, y_1 - y_2)}$$

Ex: $(6, 2) - (4, 5) = (6 - 4, 2 - 5) = (2, -3)$



Vektorlängd

$\vec{v} = (a, b)$ har längden $|\vec{v}| = \sqrt{a^2 + b^2}$

absolutbeloppet