



数学B

第1章 平面上のベクトル ベクトルのなす角



○ベクトルのなす角

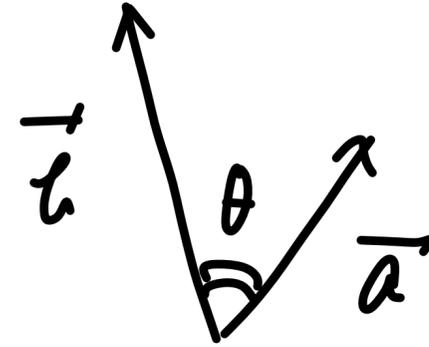
(例) $\vec{a} = \begin{pmatrix} 1 \\ 2 \end{pmatrix}, \vec{b} = \begin{pmatrix} -1 \\ 3 \end{pmatrix}$

$$\vec{a} \cdot \vec{b} = |\vec{a}| |\vec{b}| \cos \theta$$

$$\cos \theta = \frac{\vec{a} \cdot \vec{b}}{|\vec{a}| |\vec{b}|} \quad (0^\circ \leq \theta \leq 180^\circ)$$

$$\vec{a} = (a_1, a_2), \vec{b} = (b_1, b_2)$$

$$= \frac{a_1 b_1 + a_2 b_2}{\sqrt{a_1^2 + a_2^2} \sqrt{b_1^2 + b_2^2}}$$



$$\cos \theta = \frac{1 \times (-1) + 2 \times 3}{\sqrt{1^2 + 2^2} \sqrt{(-1)^2 + 3^2}}$$

$$= \frac{5}{\sqrt{5} \times \sqrt{10}}$$

$$= \frac{1}{\sqrt{2}}$$

$$\cos \theta = \frac{1}{\sqrt{2}}$$

$$\theta = 45^\circ$$

