## 向量

± Lengbaocheno

$$lpha = egin{pmatrix} a_1 \ dots \ a_n \end{pmatrix} - n$$
维列向量

zengbaocheno)

endbaothend

$$lpha = egin{pmatrix} a_1 \ dots \ a_n \end{pmatrix}$$
  $|lpha| riangleq \sqrt{a_1^2 + \ldots + a_n^2}$   $|lpha| = 0, 则lpha = 0$   $|lpha| = 1, 称lpha$ 为单位向量或规范向量  $|lpha| = 1, lpha$   $|lpha| = 1, lpha| =$ 

## 内积

zemojbaocheno,

$$\alpha = \begin{pmatrix} a_1 \\ \vdots \\ a_n \end{pmatrix}, \beta = \begin{pmatrix} b_1 \\ \vdots \\ b_n \end{pmatrix}$$

$$(\alpha, \beta) \triangleq a_1b_1 + \ldots + a_nb_n$$

$$①(\alpha, \beta) = (\beta, \alpha) = \alpha^T\beta = \beta^T\alpha$$

$$②(\alpha, \alpha) = \alpha^T\alpha = |\alpha|^2$$

$$\begin{cases} (\alpha, \alpha) = |\alpha|^2 \geq 0, (\alpha, \alpha) = 0 \Leftrightarrow \alpha = 0 \\ \exists \alpha \neq 0, (\alpha, \alpha) = \alpha^T\alpha = |\alpha|^2 > 0 \end{cases}$$
③(\alpha, \kappa\_1\beta\_1 + \ldots + \kappa\_s\beta\_s \right) = \kappa\_1(\alpha, \beta\_1) + \ldots + \kappa\_s(\alpha, \beta\_s) \right)
④\(\frac{\pi}{\alpha}(\alpha, \beta) = 0, \pi\alpha, \beta\text{E}\tilde{\pi}, \text{E}\tilde{\pi}, \text{E}\tilde{\pi}, \text{E}\tilde{\pi}.