

1 解析几何

$$\text{曲线 } \Gamma \text{ 在点 } P \text{ 处的切向量为 } \tau = \left\{ \begin{vmatrix} F'_y & F'_z \\ G'_y & G'_z \end{vmatrix}, \begin{vmatrix} F'_z & F'_x \\ G'_z & G'_x \end{vmatrix}, \begin{vmatrix} F'_x & F'_y \\ G'_x & G'_y \end{vmatrix} \right\}$$

2 两异面直线的距离

$$d = \frac{(\tau_1 \times \tau_2) \cdot \overrightarrow{P_1 P_2}}{\tau_1 \times \tau_2} = \frac{\begin{vmatrix} x_2 - x_1 & y_2 - y_1 & z_2 - z_1 \\ l_1 & m_1 & n_1 \\ l_2 & m_2 & n_2 \end{vmatrix}}{\begin{vmatrix} i & j & k \\ l_1 & m_1 & n_1 \\ l_2 & m_2 & n_2 \end{vmatrix}}$$

3 解题技巧

$$\int x^3 \sqrt{1+x^2} dx$$

$$x = t^2$$

$$\int t \sqrt{1+t} dt$$

$$\lim_{x \rightarrow 0, y \rightarrow 0} \frac{xy}{\sqrt{x^2+y^2}} = 0$$

$$\lim_{x \rightarrow 0, y \rightarrow 0} \frac{xy}{x^2+y^2} = NOT \exists$$

$$\vec{a} \times \vec{b} = \text{平行四边行面积}$$

$$\lim_{x \rightarrow +\infty} f(x) = \int_0^{+\infty} e^{-t^2} dt = \frac{\sqrt{\pi}}{2}$$

$$\iiint_{x^2+y^2+z^2 \leq R^2} (x^2+y^2+z^2) dv = \int_0^{2\pi} d\theta \int_0^\pi d\varphi \int_0^R r^2 \cdot r^2 \sin \varphi dr = \frac{4}{5} \pi R^5$$