数量函数积分的概念

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Outline

概念

- 分割
- 取近似
- 求和
- 求极限

$$\int_{\Omega} f(M)d\Omega = \lim_{d\to 0}\sum_{i=1}^{n} f(M_i)\triangle\Omega_i$$

$$\int\int_{D} f(x,y)d\sigma,\ \int\int\int_{\Omega} f(x,y,z)dV$$

$$\int_{L} f(x,y)ds,\ \int_{L} f(x,y,z)ds$$

$$\int\int_{\Sigma} f(x,y,z)dA.$$

性质

- 线性:

$$\int_{\Omega}[af(M)+bg(M)]d\Omega = a\int_{\Omega}f(M)d\Omega + b\int_{\Omega}g(M)d\Omega$$

- 区域可加性
- 单调性
- $\int_{\Omega}1d\Omega = |\Omega|$
- 估值定理
- 中值定理