$$\sum_{n=0}^{\infty} x^n = \frac{1}{1-x} \quad x \in (-1,1)$$

$$\sum_{n=0}^{\infty} \frac{x^n}{n!} = e^x \quad x \in R$$

$$\sum_{0}^{\infty} (-1)^n \frac{x^{2n+1}}{(2n+1)!} = \sin x$$

$$\sum_{0}^{\infty} (-1)^n \frac{x^{2n}}{(2n)!} = \cos x$$

$$\frac{1}{1+x} = 1 - x + x^2 - x^3 + \cdots = \sum_{0}^{\infty} (-1)^n x^n$$

$$\ln(1+x) = x - \frac{x^2}{2} + \frac{x^3}{3} - \frac{x^4}{4} + \cdots = \sum_{0}^{\infty} (-1)^n \cdot \frac{x^{n+1}}{n+1} \quad x \in (-1,1]$$

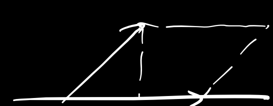
$$\oiint_{\Sigma} P\,dydz + Q\,dxdz + R\,dxdy$$
$$= \iiint_{\Omega} \left(\frac{\partial P}{\partial x} + \frac{\partial Q}{\partial y} + \frac{\partial R}{\partial z}\right) dxdydz$$

$$\oint_L Pdx + Qdy + Rdz = \iint_{\Sigma} \begin{vmatrix} dydz & dxdz & dxdy \\ \frac{\partial}{\partial x} & \frac{\partial}{\partial y} & \frac{\partial}{\partial z} \\ P & Q & R \end{vmatrix} = \iint_{\Sigma} \begin{vmatrix} \cos\alpha & \cos\beta & \cos\gamma \\ \frac{\partial}{\partial x} & \frac{\partial}{\partial y} & \frac{\partial}{\partial z} \\ P & Q & R \end{vmatrix} dS$$

$$\oint_L Pdx + Qdy = \iint_{\Sigma} \left(\frac{\partial Q}{\partial x} - \frac{\partial P}{\partial y}\right) dxdy.$$

点到面：$d = \dfrac{|Ax_0 + By_0 + Cz_0 + D|}{\sqrt{A^2 + B^2 + C^2}}$

点到线：$d = \dfrac{|\overrightarrow{MM_0} \times \vec{s}|}{|\vec{s}|}$



$$\frac{x-x_0}{a} = \frac{y-y_0}{b} = \frac{z-z_0}{c}$$

线与线：$d = \dfrac{|\overrightarrow{M_1M_2} \cdot \vec{s_1} \times \vec{s_2}|}{|\vec{s_1} \times \vec{s_2}|}$

极限∃ → 连续

连续偏导数 → 可微 → 可偏导

方向导存在.

$$\lim \; f(\Delta x + x_0, \Delta y + y_0) - f(x_0, y_0) - f'_x(x_0, y_0)\Delta x - f'_y(x_0, y_0)\Delta y$$

$$\lim_{\substack{\Delta x\to 0\\ \Delta y\to 0}}$$

$$\sqrt{\Delta x^2+\Delta y^2}$$

$$\frac{\Delta z - z'_x(x_0,y_0)\Delta x - z'_y(x_0,y_0)\Delta y}{\rho}$$

$$y' + p(x)y = q(x)$$

$$y = e^{-\int p(x)dx}\left(C + \int q(x)e^{\int p(x)dx}dx\right)$$

$$y'' + p(x)y' + q(x)y = 0.$$

用多项式 / 指数代

$$y_2 = y_1\int \frac{1}{y_1^2}e^{-\int p(x)dx}dx.$$

$$y'' + py' + qy = P_n(x)e^{\lambda x}.$$

$$\frac{1}{a^2+x^2} = \left(\frac{1}{a}\arctan\frac{x}{a}\right)'$$

$$\frac{1}{a^2-x^2} = \frac{1}{2a}\ln\left|\frac{a+x}{a-x}\right|$$

$$\frac{1}{\sqrt{a^2-x^2}} = \arcsin\frac{x}{a}$$

$$\frac{1}{\sqrt{x^2\pm a^2}} = \ln\left|x+\sqrt{x^2\pm a^2}\right|$$

$$\frac{1}{\cos^2 x} \sim \tan x.$$

$$\tan x \sim -\ln|\cos x|$$

$$\frac{1}{\sin^2 x} \sim \frac{-1}{\tan x}$$

$$f(x) = \frac{a_0}{2} + \sum_{n=1}^{\infty}(a_n\cos nx + b_n\sin nx)$$

$$a_0 = \int_{-\pi}^{2} f(x)dx$$

$$a_n = \frac{1}{\pi}\int_{-\pi}^{\pi} f(x)\cos nx \, dx$$

$$b_n = \frac{1}{\pi}\int_{-\pi}^{\pi} f(x)\sin nx \, dx.$$