$$(u+v)^{(n)} = u^{(n)} + v^{(n)} \qquad (uv)^{(n)} = C_n^0 u^{(n)} + C_n^1 u^{(n-1)} v' + \dots + C_n^n uv^{(n)} \qquad (sinx)^{(n)} = sin(x + \frac{n\pi}{2}) \qquad (cosx)^{(n)} = coss(x + \frac{n\pi}{2})$$

$$\frac{1}{(ax+b)^{(n)}} = \frac{(-1)^n n! a^n}{(ax+b)^{(n+1)}}$$

设 y=f(x) 可导且
$$f'(x) \neq 0, x = \varphi(y)$$
 为反函数,则 $x = \varphi(y)$ 可导,且 $\varphi'(y) = \frac{1}{f'(x)}$ 设 y=f(x) 二阶可导且 $f'(x) \neq 0, x = \varphi(y)$ 为反函数,则 $x = \varphi(y)$ 二阶可导,且 $\varphi''(y) = -\frac{f''(x)}{f'^3(x)}$ $x \to 0$ 常用的等价无穷小 $x \sim sinx \sim tanx \sim arcsinx \sim arctanx \sim ln(1+x) \sim e^x - 1$, $1 - cosx \sim \frac{x^2}{2}, 1 - cos^ax \sim \frac{a}{2}x^2$ $(1+x)^a - 1 \sim ax$, $a^x - 1 \sim xlna$ $x \to 0$ 常用的麦克劳林公式 $e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots + \frac{x^n}{n!} + o(x^n)$ $sinx = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots + \frac{(-1)^n}{(2n+1)!}x^{2n+1} + o(x^{2n+1})$ $cosx = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \dots + \frac{(-1)^{n-1}}{(2n)!}x^{2n} + o(x^{2n})$ $\frac{1}{1-x} = 1 + x + x^2 + x^3 + x^4 + \dots + x^n + o(x^n)$ $\frac{1}{1+x} = 1 - x + x^2 - x^3 + x^4 + \dots + \frac{(-1)^{n-1}}{n}x^n + o(x^n)$ $ln(1+x) = x - \frac{x^2}{2} + \frac{x^3}{3} - \dots + \frac{(-1)^{n-1}}{n}x^n + o(x^n)$ $(1+x)^a = 1 + ax + \frac{a(a-1)}{2!}x^2 + \frac{a(a-1)(a-2)}{3!}x^3 + \dots + \frac{a(a-1)\dots(a+1-n)}{n!}x^n$