

$x \rightarrow 0, x - \sin x$  洛必达 / 泰勒

$$\sin x = x - \frac{1}{6}x^3 + o(x^3)$$

$$\Rightarrow x - \sin x = \frac{1}{6}x^3 + o(x^3)$$

$$\Rightarrow x - \sin x \sim \frac{1}{6}x^3, \quad x \rightarrow 0$$

$$g(x) - \sin g(x) \sim \frac{1}{6}g(x)^3, \quad g(x) \rightarrow 0$$

$$\lim_{x \rightarrow 0} \frac{[\sin x - \sin(\sin x)] \sin x}{x^4} = \frac{1}{6}$$

$\overset{\text{泰勒}}{=} \frac{1}{6} \sin^3 x$