

$$\frac{g}{h} = \frac{x - \frac{\sinh x}{\cosh x}}{x^2 \frac{\sinh x}{\cosh x}} = \frac{x \cosh x - \sinh x}{x^2 \sinh x}$$

$$\lim_{x \rightarrow 0} \frac{g}{h} = \frac{0}{0}$$

$$g' = \cosh x + x \sinh x - \cosh x = 0 \quad @ \quad x=0$$

$$h' = 2x \sinh x + x^2 \cosh x = 0 \quad ||$$

$$g'' = \sinh x + \sinh x + x \cosh x - \sinh x = 0 \quad ||$$

$$h'' = 2 \sinh x + 2x \cosh x + 2x \cosh x + x^2 \sinh x = 0 \quad ||$$

$$g''' = \cosh x + \cosh x + \cosh x + x \sinh x - \cosh x = 2 \quad ||$$

$$h''' = 2 \cosh x + 2 \cosh x + 2 \sinh x + 2 \cosh x + 2x \sinh x + 2x \sinh x + x^2 \cosh x = 6 \quad @ \quad x=0$$

$$\Rightarrow \lim_{x \rightarrow 0} \frac{g'''}{h'''} = \frac{1}{3}$$