

(60) Show That  $\ln x \ll x^a$

$$\begin{aligned} & (a > 0) \\ & \lim_{x \rightarrow \infty} \frac{\ln x}{x^a} \quad \frac{\infty}{\infty} \quad \xrightarrow{L'H} \quad \frac{\frac{1}{x}}{ax^{a-1}} \\ & = \frac{1}{ax \cdot x^{a-1}} = \frac{1}{ax^a} \rightarrow 0 \end{aligned}$$