

$\frac{f(x)}{g(x)}$

(16) $\lim_{x \rightarrow -\infty} x \sin\left(\frac{1}{x}\right) \quad -\infty \cdot 0$

$$\frac{\sin\left(\frac{1}{x}\right)}{\frac{1}{x}} \quad \frac{0}{0} \quad \frac{\sin(x^{-1})}{x^{-1}}$$

$\xrightarrow{L'H}$

$$\frac{\cos(x^{-1}) \cdot -x^{-2}}{-x^{-2}} = \cos(x^{-1}) = \cos\left(\frac{1}{x}\right)$$

$$= 1$$

$$\lim_{x \rightarrow -\infty} \frac{\ln(x^4 + 1)}{x} \quad \frac{\infty}{-\infty} \xrightarrow{LR} \frac{1}{x^4 + 1} \cdot 4x^3$$

$$= \frac{4x^3}{x^4 + 1} \xrightarrow[\infty]{-\infty} \frac{12x^2}{4x^3} = \frac{3}{x} \rightarrow 0$$