Calculus - Chapter 27 - L'Hôpital's Rule.

Definition: If $f(x)$ and $g(x)$ either both approach 0 or both approach $\pm\infty$ then

$$\lim \frac{f(x)}{g(x)} = \lim \frac{f'(x)}{g'(x)}$$

Examples:

(a). $\lim_{x\to+\infty} \frac{\ln(x)}{x} = \lim_{x\to+\infty} \frac{1/x}{1} = \lim_{x\to+\infty} \frac{1}{x} = 0.$

(b). $\lim_{x\to+\infty} \frac{x}{e^x} = \lim_{x\to+\infty} \frac{1}{e^x} = 0.$