L'Hospital's Rule

If results $\lim_{x \to c} f(x)$ or $\lim_{x \to \infty} f(x)$ results in an indeterminate form $\left(\frac{0}{0}, \frac{\infty}{\infty}, \infty - \infty, 0 \cdot \infty, 0^0, 1^\infty, \infty^0\right)$, and $f(x) = \frac{p(x)}{q(x)}$, then

$$\lim_{x \to c} f(x) = \lim_{x \to c} \frac{p(x)}{q(x)} = \lim_{x \to c} \frac{p'(x)}{q'(x)} \quad \text{and} \quad \lim_{x \to \infty} f(x) = \lim_{x \to \infty} \frac{p(x)}{q(x)} = \lim_{x \to \infty} \frac{p'(x)}{q'(x)}$$

L'Hôpital's Rule:

$$\lim_{x \to c} \frac{f(x)}{g(x)} = \lim_{x \to c} \frac{f'(x)}{g'(x)}$$

l'Hopital's Rule

If $\frac{f(a)}{g(a)} = \frac{0}{0}$ or $= \frac{\infty}{\infty}$,

then $\lim_{x \to a} \frac{f(x)}{g(x)} = \lim_{x \to a} \frac{f'(x)}{g'(x)}$