

Summary: Limits of Quotients

Limit Law for Division

If $\lim_{x \rightarrow a} f(x) = L$ and $\lim_{x \rightarrow a} g(x) = M$, then:

- If $M \neq 0$, then $\lim_{x \rightarrow a} \frac{f(x)}{g(x)} = \frac{L}{M}$.
- If $M = 0$ but $L \neq 0$, then $\lim_{x \rightarrow a} \frac{f(x)}{g(x)}$ does not exist.
- If both $M = 0$ and $L = 0$, then $\lim_{x \rightarrow a} \frac{f(x)}{g(x)}$ might exist, or it might not exist.
More work is necessary to determine whether the last type of limit exists, and what it is if it does exist.