

Working with other members of Team Pi, find examples of functions $f(x)$ and $g(x)$ such that the indeterminate form has a particular resolution. You will need to present your findings to a member of Team Tau.

- a) Suppose $\lim_{x \rightarrow a} f(x) = 0$ and $\lim_{x \rightarrow a} g(x) = 0$. Find a f and g such that the value of $\lim_{x \rightarrow a} \frac{f(x)}{g(x)} = 0$.
- b) Suppose $f(x)$ and $g(x)$ have a vertical asymptote at $x = a$. Find a f and g such that $\lim_{x \rightarrow a} \frac{f(x)}{g(x)}$ diverges to infinity.
- c) Suppose $\lim_{x \rightarrow a} g(x) = 0$ and $f(x)$ has a vertical asymptote at $x = a$. Find a f and g such that $\lim_{x \rightarrow a} f(x)g(x) = 0$.
- d) Suppose $\lim_{x \rightarrow a} f(x) = 1$ and $g(x)$ diverges to positive infinity. Find a f and g such that $\lim_{x \rightarrow a} f(x)g(x) = 0$.

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- b) Suppose $f(x)$ and $g(x)$ have a vertical asymptote at $x = a$. Find a f and g such that the value of $\lim_{x \rightarrow a} \frac{f(x)}{g(x)} = 0$.
- c) Suppose $\lim_{x \rightarrow a} g(x) = 0$ and $f(x)$ has a vertical asymptote at $x = a$. Find a f and g such that $\lim_{x \rightarrow a} f(x)g(x) = 1$.
- d) Suppose $\lim_{x \rightarrow a} f(x) = 1$ and $g(x)$ diverges to positive infinity. Find a f and g such that $\lim_{x \rightarrow a} f(x)g(x)$ diverges to infinity.