

Calculus BC

Section 8.7 - Indeterminate Forms and L'Hopital's Rule

Obj: - To use L'Hopital's rule to find limits.

L'hopital's Rule and the Forms $1^\infty, 0^0, \infty^0$

-We use L'hopital's rule to find $\lim_{x \rightarrow a} \frac{f(x)}{g(x)}$ when we have

the indeterminate forms $\frac{0}{0}$ and $\frac{\infty}{\infty}$.

-When we have limits of the forms: $1^\infty, 0^0, \infty^0$, we need to change them to the form $\lim_{x \rightarrow a} \frac{f(x)}{g(x)}$ before the applying L'hopital's rule.

1. Find $\lim_{x \rightarrow 0^+} (1+x)^{1/x}$

-limit is:

-take the ln

-write as a ratio

-take the limit of the ratio

-apply L'Hopital's rule

-answer is for _____

-to get the answer for $\lim_{x \rightarrow 0^+} (1+x)^{1/x}$ we need to _____

2. Find $\lim_{x \rightarrow \infty} (1+2x)^{1/(2 \ln x)}$

Indeterminate form $\infty - \infty$. Use common denominator to put into one fraction.