

# Using L'Hospital's Rule

Infographic

**HOT TOPICS: L'HOSPITAL'S RULE**

### L'HÔPITAL'S RULE

- 1 Are the functions differentiable on the interval containing  $x = c$ ?
- 2 Does the limit of the quotient at  $x = c$  have an indeterminate form?  
 $0/0, \infty/\infty, 0 \cdot \infty, 1^\infty, 0^0, \infty - \infty, \infty^0$
- 3 Take the derivative of both numerator and denominator  
$$\lim_{x \rightarrow c} \frac{f(x)}{g(x)} = \lim_{x \rightarrow c} \frac{f'(x)}{g'(x)}$$
  
Assume that  $g'(x) \neq 0$  (except possibly at  $c$ )
- 4 Find the limit of the derivatives  
The answer will also be the limit of the initial function, if your answer is a number value. But, if your answer is another indeterminate form...
- 5 Repeated use of the rule  
If you use the rule and still have an indeterminate form, you can repeat steps #3 and #4 until you determine a determinate form.

**HOT TOPICS**

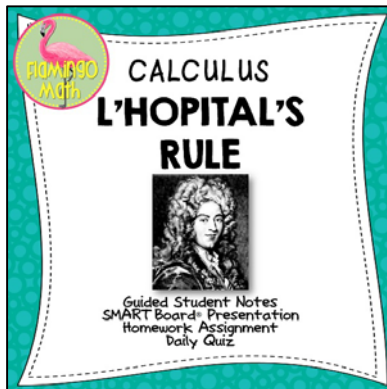


# FLAMINGO MATH

L'Hospital's Rule is a skill that Calculus students need, after the derivative is taught.

Here is a free HOT TOPICS INFOGRAPHIC:

- Students can use the infographic as a page in their Interactive Notebook.
- Copy on card stock and laminate to be used as a bookmark or reference card while working through your lesson.
- Students can create a collection of HOT TOPICS for review at the end of the course.



Do you need a full lesson on this topic? Be sure to check out my [Calculus products](#):



Read my blog post for:

[Keep Calm and Use L'Hospital's Rule](#)

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$$\frac{0}{0}, \frac{\infty}{\infty}, 0 \cdot \infty, 1^\infty, 0^0, \infty - \infty, \infty^0$$

3 Take the derivative of both numerator and denominator

$$\lim_{x \rightarrow c} \left[ \frac{f(x)}{g(x)} \right] = \lim_{x \rightarrow c} \frac{f'(x)}{g'(x)} ;$$

Assume that  $g'(x) \neq 0$   
(except possibly at  $c$ ).

4 Find the limit of the derivatives

The answer will also be the limit of the initial function, if your answer is a number value. But, if your answer is another indeterminate form. . .

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If you use the rule and still have an indeterminate form, then repeat steps #3 and #4 until you get a determinate form.

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**Directions:** There are two HOT TOPICS per page. Print the HOT TOPIC on paper or card stock. Then, cut each one out individually. These can be used as a laminated bookmark, or as a notebook foldable.

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