- Here is an example of notation for L'Hôpital's Rule.

$$\lim_{x\to 0}\frac{\sin(x)}{x}\overset{H}{=}\lim_{x\to 0}\frac{\cos(x)}{1}=\frac{1}{1}=1$$

  The H over the equal sign indicates you are using L'Hôpital's Rule.

1. Demonstrate how to use L'Hôpital's rule to evalaute:

$$\lim_{x\to\infty}\frac{x^2}{2^x}$$

2. Demonstrate how to use L'Hôpital's rule, *exactly three times*, to evalaute:

$$\lim_{x\to\infty}\sqrt{x^2+x}-\sqrt{x^2-x}$$

3. The base of a solid is the region between $f(x)=x^2-1$ and $g(x)=-x^2+1$, and its cross-sections perpendicular to the x-axis are equilateral triangles. Find the volume.