SECTION 4.8 L'HÔPITAL'S RULE

1. L'Hôpital's Rule says:

2. Example $0/0$.

   (a) $\lim_{x\to 2} \dfrac{x^2-4}{x^2-2x}$

   (b) $\lim_{x\to 0} \dfrac{\sin(4x)}{3e^{3x}-3}$

3. Example ∞/∞.

   (a) $\lim_{x\to \infty} \dfrac{\ln(x)}{\sqrt{x}}$

   (b) $\lim_{x\to \infty} \dfrac{2e^x+1}{1-3e^x}$

4. Example $0 \cdot \infty$.

   (a) $\lim_{x \to \infty} x \sin(\frac{\pi}{x})$

   (b) $\lim_{x \to 0^+} x \ln(x)$

5. Example 1^∞ or 0^0 or ∞^0

   (a) $\lim_{x \to 0^+} (1+x)^{1/x}$

   (b) $\lim_{x \to 0^+} x^{\sin(x)}$