L’Hospital’s Rule §4.4

1. Let \( f(x) = \frac{e^x}{2x} \).
   (a) Consider \( \lim_{x \to \infty} f(x) \). What, if any, indeterminate type is this?

   (b) Evaluate the limit by either using chapter 2 methods or L’Hospital’s Rule.

2. Let \( f(x) = \frac{\sin x}{1 - \cos x} \).
   (a) Consider \( \lim_{x \to \pi^-} f(x) \). What, if any, indeterminate type is this?

   (b) Evaluate the limit by either using chapter 2 methods or L’Hospital’s Rule.
3. Find \( \lim_{x \to 1} \frac{x^2 - x}{x^2 - 1} \)

4. Find \( \lim_{x \to 0} \frac{x + \sin(x)}{x + \cos(x)} \)

5. Find \( \lim_{x \to \infty} x^3 e^{-x^2} \)