4.7 L'Hospital's Rule, Growth, and Dominance

Name: Date:

P 1. Find

$$\lim_{x \to 2} \frac{x-2}{x^2-4}$$

P 3. Find

$$\lim_{x \to 1} \frac{x^6-1}{x^4-1}$$

P 7. Find

$$\lim_{x \to \infty} \frac{\ln x}{x}$$

P 9. Find
$$\lim_{x \to 0} \frac{e^{4x} - 1}{\cos x}$$

P 21. Find
$$\lim_{x \to 0} \frac{x^2}{\sin x}$$

P 29. Find
$$\lim_{x \to 0} (1 + x)^x$$

P 35. Determine whether the limit exists, and where possible evaluate it.

$$\lim_{x \to 0} \frac{\sinh(2x)}{x}$$

P 39. Determine whether the limit exists, and where possible evaluate it.

$$\lim_{t \to 0^+} \left(\frac{2}{t} - \frac{1}{e^t - 1} \right)$$

P 47. Explain why l'Hospital's rule cannot be used to calculate the limit. Then evaluate the limit if it exists.

$$\lim_{x \to \infty} \frac{e^{-x}}{\sin x}$$