

Verify that L'Hospital's Rule applies to each of the following, and evaluate using L'Hopital's Rule. If it does not apply, evaluate using other techniques, if possible.

a) 
$$\lim_{x \rightarrow 1} \frac{2x^2 + x - 3}{x^2 - 1}$$

d) 
$$\lim_{x \rightarrow \infty} \frac{6x^2 - 4x}{8 - 2x^2}$$

b) 
$$\lim_{x \rightarrow 0} \frac{\sin 2x}{x^2 + 3x}$$

e) 
$$\lim_{x \rightarrow 0} \left( \frac{1}{x} - \cot x \right)$$

c) 
$$\lim_{x \rightarrow \infty} \frac{\ln x}{\sqrt{x}}$$

f) 
$$\lim_{x \rightarrow 0} \frac{1 + x - e^x}{1 - \cos x}$$