

1. Estimate the limit graphically. Use L'Hôpital's rule to confirm your estimate.

a) $\lim_{x \rightarrow 2} \left(\frac{x-2}{x^2-4} \right)$

b) $\lim_{\theta \rightarrow 0} \frac{\sin(\theta^2)}{\theta}$

2. Use L'Hôpital's Rule to evaluate the limit.

a) $\lim_{x \rightarrow 1} \left(\frac{x^3-1}{4x^3-x-3} \right)$

b) $\lim_{x \rightarrow \infty} \left(\frac{\ln(x^5)}{x} \right)$

c) $\lim_{y \rightarrow 0^+} \frac{\ln(y^2+y)}{\ln(y)}$

d) $\lim_{t \rightarrow 0} \left(\frac{\cos t - 1}{e^t - t - 1} \right)$

e) $\lim_{x \rightarrow \infty} \left(\frac{\ln(x+1)}{\log_2 x} \right)$

f) $\lim_{x \rightarrow 0^+} x \ln x$

g) $\lim_{x \rightarrow 0^+} (\csc x - \cot x + \cos x)$