

Due date: _____

Name: _____

1. Use L'Hospital's Rule to find the following limits.

a) $\lim_{x \rightarrow 0} \frac{\tan 3x}{x}$

b) $\lim_{x \rightarrow 0} \frac{\sqrt{1+x}-1}{x}$

c) $\lim_{x \rightarrow 0^+} \frac{\cos x - 1}{x^3}$

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

e) $\lim_{x \rightarrow \infty} \frac{e^x}{x^2}$

f) $\lim_{x \rightarrow \infty} \frac{x + \ln x}{x \ln x}$

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

h) $\lim_{x \rightarrow 0} (x \csc x)$

i) $\lim_{x \rightarrow \infty} x \sin\left(\frac{1}{x}\right)$

j) $\lim_{x \rightarrow 0^+} \left(\csc x - \frac{1}{x}\right)$

$$\text{k) } \lim_{x \rightarrow 1^+} \left(\frac{x}{x-1} - \frac{1}{\ln x} \right)$$

$$\text{l) } \lim_{x \rightarrow 0^+} \left(-\frac{1}{\ln x} \right)^x$$

$$\text{m) } \lim_{x \rightarrow 0^+} x^{\sqrt{x}}$$

$$\text{n) } \lim_{x \rightarrow \infty} (x - 1)e^{-x^2}$$

$$\text{o) } \lim_{x \rightarrow \infty} x^{1/x}$$

$$\text{p) } \lim_{x \rightarrow 0^+} (1 - 2x)^{1/x}$$

q) $\lim_{x \rightarrow \infty} (1 + x^2)^{1/x}$

Q: Solve: TPMWFE

Optional exercises from the Stewart textbook if you'd like more practice:
4.4 (p.311) #9-67 odd