

NAME: _____

MAC 2311 - Fall'16: Worksheet Oct. 25 - l'Hopital

1) Compute the following limits:

a) $\lim_{x \rightarrow 0} \frac{e^{2x} - 1}{\sin(3x)}$

b) $\lim_{x \rightarrow 0} \frac{1 - \cos(5x)}{x^2}$

2) Compute the following limits:

a) $\lim_{x \rightarrow \infty} \frac{\ln(x)}{x}$

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

3) Compute the following limits.

a) $\lim_{x \rightarrow \infty} \sqrt{x}e^{-x}$

b) $\lim_{x \rightarrow 0^+} \tan(x) \ln(x)$

c) $\lim_{x \rightarrow +\infty} (\sqrt{x^2 + 3x} - x)$

4) Compute the following limits.

a) $\lim_{x \rightarrow 0^+} (-\ln(x))^x$

b) $\lim_{x \rightarrow +\infty} \left(1 + \frac{a}{x}\right)^{bx}$, where a and b are constants.