

## Lesson 7 Practice Problems

### L'Hôpital's Rule

MATH 2200-98

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Evaluate the following limits. State the indeterminate form and use L'Hôpital's Rule where appropriate. If L'Hôpital's Rule does not apply, explain why. Instead of needing to write derivative notation you can indicate you have applied L'Hôpital's Rule in your limit evaluation by using an "H" above the equal sign like  $\stackrel{\text{H}}{=}$  as is done in the lecture notes for this lesson.

1.  $\lim_{x \rightarrow 0} \frac{3 \sin(4x)}{5x}$

2.  $\lim_{x \rightarrow \infty} \frac{e^{3x}}{3e^{3x} + 5}$

3.  $\lim_{x \rightarrow 0^+} \sin(x) \sqrt{\frac{1-x}{x}}$

4.  $\lim_{x \rightarrow \infty} \left(1 + \frac{1}{x}\right)^x$

5.  $\lim_{x \rightarrow 0^+} x^{1/\ln(x)}$

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