

MA 182 GROUP WORK (4.5)

NAME _____

Due Thursday 2/19/09

1. Given that

$$\lim_{x \rightarrow a} f(x) = 0 \quad \lim_{x \rightarrow a} g(x) = 0 \quad \lim_{x \rightarrow a} h(x) = 1$$

$$\lim_{x \rightarrow a} p(x) = \infty \quad \lim_{x \rightarrow a} q(x) = \infty$$

which of the following limits are indeterminate forms? For those that are not an indeterminate form, evaluate the limit if possible.

A. $\lim_{x \rightarrow a} [f(x) p(x)]$

B. $\lim_{x \rightarrow a} [h(x) p(x)]$

C. $\lim_{x \rightarrow a} [p(x) q(x)]$

D. $\lim_{x \rightarrow a} [f(x)]^{g(x)}$

E. $\lim_{x \rightarrow a} [f(x)]^{p(x)}$

F. $\lim_{x \rightarrow a} [p(x)]^{f(x)}$

G. $\lim_{x \rightarrow a} [p(x)]^{q(x)}$

H. $\lim_{x \rightarrow a} \sqrt[q(x)]{p(x)}$

2. Find the limit. Use L'Hospital's Rule where appropriate. If there is a more elementary method, use it. If L'Hospital's Rule does not apply, explain why.

A.
$$\lim_{t \rightarrow 0} \frac{e^{3t} - 1}{t}$$

B.
$$\lim_{\theta \rightarrow \frac{\pi}{2}} \frac{1 - \sin \theta}{\csc \theta}$$

C.
$$\lim_{x \rightarrow \infty} \frac{e^x}{x^3}$$

D.
$$\lim_{x \rightarrow -\infty} x^2 e^x$$