Matthew Boelkins **MTH201-10**

Assignment 10.28.15.Sec2.8 due 11/02/2015 at 10:59pm EST

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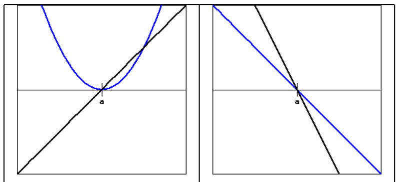
1. (1 pt) For the figures below, determine the nature of $\lim_{x\to a}\frac{f(x)}{g(x)}$, if $f(x)$ is shown as the blue curve and $g(x)$ as the black curve.



$\lim_{x\to a}\frac{f(x)}{g(x)} = \boxed{?}$	$\lim_{x\to a}\frac{f(x)}{g(x)} = \boxed{?}$

Answer(s) submitted:

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(incorrect)

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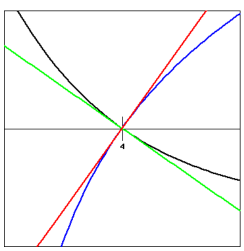
2. (1 pt) The functions f and g and their tangent lines at $(4,0)$ are shown in the figure below.



f is shown in blue, g in black, and the tangent line to f is $y = 1.6(x-4)$, and is graphed in green, and the tangent line to g is $y = -0.8(x-4)$, and is graphed in red.

Find the limit

$\lim_{x\to 4}\frac{f(x)}{g(x)} =$ ___

Answer(s) submitted:

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(incorrect)

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3. (1 pt) Find the limit: $\lim_{x\to 2}\frac{\ln(x/2)}{x^2-4} =$ ____________

(Enter **undefined** *if the limit does not exist.)*

Answer(s) submitted:

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(incorrect)

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4. (2 pts) Compute the following limits using l'Hôpital's rule if appropriate. Use INF to denote ∞ and MINF to denote $-\infty$.

$\lim_{x\to 0}\frac{1-\cos(7x)}{1-\cos(5x)} =$ __________

$\lim_{x\to 1}\frac{6^x-5^x-1}{x^2-1} =$ __________

Answer(s) submitted:

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(incorrect)

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5. (1 pt)

Evaluate the limit using L'Hospital's rule

$$\lim_{x\to 0}\frac{e^x-1}{\sin(5x)}$$

____

Answer(s) submitted:

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(incorrect)

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6. (1 pt)

Evaluate the limit using L'Hospital's rule if necessary

$$\lim_{x\to 0}\frac{\sin(13x)}{\sin(11x)}$$

____

Answer(s) submitted:

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(incorrect)

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7. (1 pt)

Evaluate the limit using L'Hospital's rule

$$\lim_{x\to 0}\frac{14^x-8^x}{x}$$

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Answer(s) submitted:

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(incorrect)

8. (1 pt)
Evaluate the limit using L'Hopital's rule

$$\lim_{x\to\infty} \frac{11x^3}{e^{4x}}$$

______

Answer(s) submitted:

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(incorrect)

9. (1 pt) Evaluate the limit using L'Hospital's rule

$$\lim_{x\to 0} \frac{e^x + x - 1}{8x}$$

______

Answer(s) submitted:

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(incorrect)

10. (2 pts) Compute the following limits using l'Hospital's rule if appropriate. Use INF to denote ∞ and MINF to denote $-\infty$.

$\lim_{x\to\infty} \frac{\ln(x^9 - 8)}{\ln(x)\cos(1/x)} =$ ______

$\lim_{x\to\infty} \frac{e^{8x}}{e^{9x} - e^{-9x}} =$ ______

Answer(s) submitted:

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(incorrect)