Candle Center - Infinite Calculus

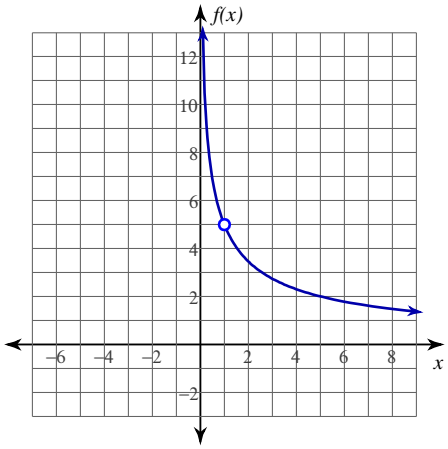
Name_____

L'Hôpital's Rule

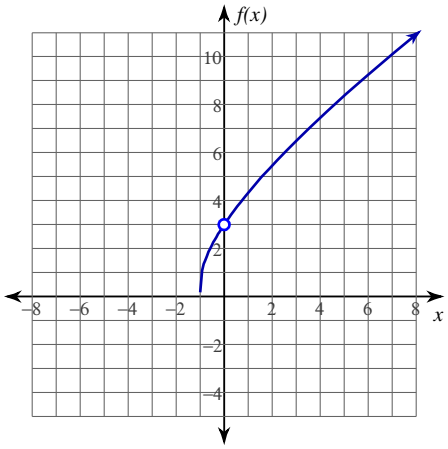
Date_____ Period____

Evaluate each limit using L'Hôpital's Rule.

1) $\lim\limits_{x\to 1} \dfrac{5\ln x}{x-1}$



2) $\lim\limits_{x\to 0} \dfrac{3x}{\ln(x+1)}$



3) $\lim\limits_{x\to 0^+} 5x^2 \ln x$

4) $\lim\limits_{x\to \infty} 4x \cdot e^{-x}$

5) $\lim\limits_{x\to \frac{\pi}{2}} (3\sec x - 3\tan x)$

6) $\lim\limits_{x\to \infty} \left(\dfrac{x^2}{x-1} - \dfrac{x^2}{x+1}\right)$

7) $\lim\limits_{x\to 0^+} 5 \cdot (\tan x)^{\sin x}$

8) $\lim\limits_{x\to 0^+} 3x^x$

Evaluate each limit. Use L'Hôpital's Rule if it can be applied. If it cannot be applied, evaluate using another method and write a * next to your answer.

9) $\lim\limits_{x\to 0} \dfrac{e^x - e^{-x}}{x}$

10) $\lim\limits_{x\to 0^+} \dfrac{e^x + e^{-x}}{\sin(2x)}$

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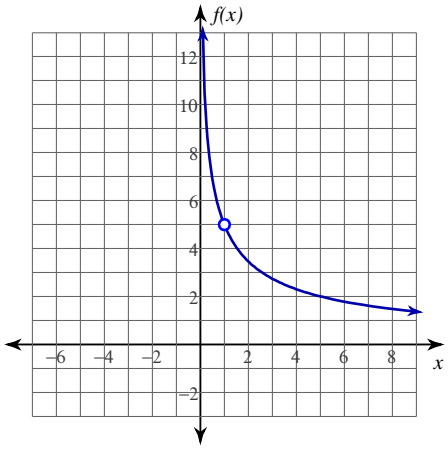
Evaluate each limit using L'Hôpital's Rule.

1) $\lim_{x \to 1} \frac{5 \ln x}{x - 1}$



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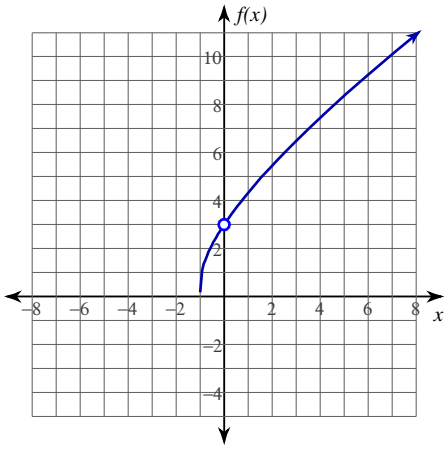
2) $\lim_{x \to 0} \frac{3x}{\ln (x + 1)}$



3

3) $\lim_{x \to 0^+} 5x^2 \ln x$

0

4) $\lim_{x \to \infty} 4x \cdot e^{-x}$

0

5) $\lim_{x \to \frac{\pi}{2}} (3\sec x - 3\tan x)$

0

6) $\lim_{x \to \infty} \left(\frac{x^2}{x - 1} - \frac{x^2}{x + 1} \right)$

2

7) $\lim_{x \to 0^+} 5 \cdot (\tan x)^{\sin x}$

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8) $\lim_{x \to 0^+} 3x^x$

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Evaluate each limit. Use L'Hôpital's Rule if it can be applied. If it cannot be applied, evaluate using another method and write a * next to your answer.

9) $\lim_{x \to 0} \frac{e^x - e^{-x}}{x}$

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10) $\lim_{x \to 0^+} \frac{e^x + e^{-x}}{\sin (2x)}$

∞ *