Math 124 Name _____

#29 L'Hopital's Rule 4.7

In each problem determine if L'Hopital's Rule applies. If so, use the rule to find the limit. If not, find the limit using a table.

1. $\lim_{x\to\pi}\dfrac{\sin(3x)}{x-\pi}$

2. $\lim_{t\to 0}\dfrac{e^{2t}-1}{e^{t}}$

3. $\lim_{\theta\to 0}\dfrac{\arctan\theta}{2\theta}$

4. $\lim_{x\to\infty}\dfrac{e^{-x}}{1+\ln x}$

5. $\lim_{x\to\infty}\dfrac{(\ln x)^2}{x}$

6. $\lim_{u\to\infty}\dfrac{\sqrt{u^2+1}}{u}$

7. $\lim_{y\to 0}\dfrac{2^{y}}{y^{2}}$

8. $\lim_{x\to 1^{+}}\left(\dfrac{1}{\ln(1+x)}-\dfrac{1}{x}\right)$

9. $\lim_{\theta\to\infty}\theta\sin\left(\dfrac{1}{\theta}\right)$

10. $\lim_{z\to 0^{+}}\cos\left(\dfrac{1}{z}\right)$

11. $\lim_{t\to\infty}\cos^{2}\left(\dfrac{1}{t}\right)$

12. $\lim_{x\to 0}\dfrac{x^2+3x}{\sinh x}$

13. $\lim_{y\to 0}\dfrac{y}{\sqrt[3]{\sin y}}$

14. $\lim_{x\to 0^{+}}\dfrac{\cot x}{\ln x}$

15. $\lim_{x\to\infty}\dfrac{x+\sin(2x)}{x}$