AP Calculus AB **Name** _____

9.2 L'Hospital's Rule Practice **Period** _____

Evaluate each limit expression. L'Hospital's rule can be used for many of these problems, but remember:

- **Ignore the conditions of L'Hospital's rule at your own peril.**
- **If L'Hospital's Rule fails to lead to a limit, nothing is learned about the original limit.**
- **More efficient strategies may exist for some problems even if L'Hospitals rule is effective.**

1. $\lim_{t\to\pi} \frac{\tan 3t}{\pi - t} =$

2. $\lim_{p\to 0} \frac{\cos p}{p^2} =$

3. $\lim_{x\to 0} \frac{\sin 5x}{x} =$

4. $\lim_{x\to\infty} \frac{5x^2 - 3x}{7x^2 + 1} =$

5. $\lim_{b\to 3} \frac{b-3}{b^2 - 3} =$

6. $\lim_{x\to\infty} \frac{2x + \sin x}{3x} =$

7. $\lim_{x\to\frac{\pi}{2}} \frac{2x - \pi}{\cos x} =$

8. $\lim_{x\to 1} \frac{x^3 - 1}{4x^3 - x - 3} =$

9. $\lim_{m\to -3} \frac{m+3}{m^2 - 9} =$

10. $\lim_{y\to 2} \frac{y^2 - y - 2}{y + 1} =$

11. $\lim_{x\to 0} \frac{e^x - (1 - x)}{x} =$

12. $\lim_{x\to 1} \frac{\ln x^2}{x^2 - 1} =$

13. $\lim_{x\to\infty} \frac{x^2}{e^x} =$

14. $\lim_{x\to\infty} \frac{x^3}{x+2} =$

15. $\lim_{a\to\infty} \frac{e^a}{a^2} =$

16. $\lim_{y\to\infty} \frac{\ln y}{y^2} =$

17. $\lim_{x\to 0} \frac{\arcsin x}{x} =$

18. $\lim_{x\to\infty} \frac{3x^2-2x+1}{2x^2+3} =$

19. $\lim_{x\to\infty} \frac{x^2+2x+3}{x-1} =$

20. $\lim_{x\to 0} \frac{e^{2x}-1}{e^x} =$

21. $\lim_{x\to 3} \frac{2(x-3)}{x^2-9} =$

22. $\lim_{x\to 3} \frac{\sqrt{x+1}-2}{x-3} =$

23. $\lim_{x\to 0} \frac{\sqrt{x+3}-\sqrt{3}}{x} =$

24. $\lim_{x\to 0} \frac{\cos x-1}{x} =$

25. $\lim_{x\to 9} \frac{x-9}{\sqrt{x}-3} =$

26. $\lim_{x\to\frac{\pi}{2}} \frac{1-\sin x}{1+\cos 2x} =$

27. $\lim_{h\to 2} \frac{h^2-h-2}{h-2} =$