# The Derivative Game

Work in groups of 2-3 to solve the limits below. **You must answer the limits in the order given in order to get credit.** For instance: if you solve Problem 2 before Problem 1, you will receive NO points. However, you may distribute the limits in anyway you like; one person works on the first problem while a second person works on the next problem. **When you have an answer, come to the front and show me.** A checkmark means you received one point.

**Goal: The group with the most points at the end of class wins.**
**(The prizes are cupcakes )**
Good luck! And remember, the steps to solving limits!

1. $y = \sqrt{\pi \cos^2(x^2)}$
2. $\pi^x + \arctan\left(\frac{\pi}{x^2}\right)$
3. $y = (\sqrt{x})^{3x}$
4. $(t^2 + 5)\arctan(3t)$
5. $\ln(x - \sqrt{1 + x^2})$
6. $\left(\frac{1}{x}\right)^{\sec x}$
7. $(x^2 + 5)(\sqrt{x} + 8)$
8. $\frac{e^x}{\cos(x)+3}$
9. $\tan^3(t) + \ln(5t + 1) + 10\arcsin(t)$
10. $\tan\left(\frac{x^4}{\sqrt[4]{17x^3+1}}\right)$
11. $x^{\cos x}$
12. $\arccos(t)$
13. $e^e e^x + x^e x^x$
14. $\frac{x\sin(x)}{1+x^2}$
15. Find $f^{(10)}$ of $\sin(2x + 7) + (x^3 + 2x^2 + 1)^2$
16. $\sqrt{3 + x}\sqrt[3]{5x^2 - 6}$
17. $\left(e^x - \frac{2}{4x^3}\right)^3$
18. $(\tan x)^{\ln x}$
19. $(1 + \cos^3 x)^{2/3}$
20. $\arctan(e^{\arctan x})$
21. $(\cos x)^{sin(x)}$
22. $\frac{t}{(1+\sqrt{t})^{100}}$
23. $\sin(\sqrt{x\cos x})$
24. $x^{2^x}$
25. $\sqrt{arctan(2x)}$
26. $\left(e^{x+\sin x}\right)\Big)^{1/3}$