9am

Quiz 4

Spring 2012 **Your name:**

Math 0220 **Your TA's name:**

No calculators. Show all your work (no work = no credit). Write neatly.

1. [5 points] Use logarithmic differentiation to find the derivative of the function $x^{\sin x}$.

2. [5 points] The half-life of cesium-137 is 30 years. Suppose we have a 80-mg sample. Hom much of the sample will remain after 120 years?

3. [5 points] Evaluate the limit

$$\lim_{x \to 0} \cot 5x \, \sin 3x$$

bonus problem [5 points extra] Simplify the expression $\csc(\tan^{-1} 2x)$ (write it without trig. functions).