Name:_____ **6/10/2014**

Math 202 Calculus II **Quiz 1**

Please show all work and box your final answers. If you need more room, you may use the backs of the pages. Calculators are not allowed. Good luck!

1. Find $(f^{-1})'(a)$, where $f(x) = 5x^3 + 5x + 12$ and $a = 12$.

2. Suppose a sample of a radioactive material which is known to decay exponentially is placed on a scale. Initially, the scale reads 90 grams, and 10 days later it reads 80 grams.
   (a) Find a function $M(t)$ which gives the mass of the sample after t days.

   (b) Find the *half-life* of the material.

3. Differentiate the following functions.

(a) $y = \ln \dfrac{1+2x}{3-4x}$

(b) $y = 9^x$

(c) $y = x^{\sin x}$

4. Evaluate the following integrals.

(a) $\displaystyle\int \frac{e^x + 2}{3e^x}\, dx$

(b) $\displaystyle\int_2^4 \frac{2^{x-1}}{2^{x-1} + 1}\, dx$