Please read the following instructions carefully:

- There are **two problems** in this quiz.
- The point distribution is given in the table below.
- Please write each solution on a separate page.
- This is a group quiz. Feel free to discuss the problems with your teammates. **You must, however, write and turn in your own work.**

| Question: | 1 | 2 | Total |
|---|---|---|---|
| Points: | 5 | 5 | 10 |

1. (5 points) Solve the following questions:
   (a) Find $dx/dy$ for the function $y = \ln(x^3 + 1)$. That is, compute the derivative of the inverse function of $y = \ln(x^3 + 1)$.
   (b) It can be shown that the function.

$$f(x) = \int_0^x \sqrt{1 + t^4}\, dt,$$

   has an inverse function. Letting $c = f(1)$, compute $(f^{-1})'(c)$, the derivative of the inverse function at $c$.

2. (5 points) Solve the following questions:
   (a) Compute the derivative of the function,

$$f(x) = 2^{x+2} + \sin^{-1}(x^3).$$

   (b) Evaluate the integral,

$$\int \frac{dx}{9x^2 + 16}.$$