

Name:

Math 105 Quiz 6 covering §3.3-§3.5 **Show all work for credit.**

1. $f(x) = 2 \arctan(3e^{5x})$, find $f'(x)$.

2. Find the slope of the tangent line to the hyperbola $x^2 - y^2 = 1$ at the point $(\sqrt{3}, \sqrt{2})$.

3. Differentiate $y = x^2 \arcsin(3x + 1)$.

4. Use logarithmic differentiation to find the derivative of the function $y = \frac{\sqrt{x} e^x \sin(4x)}{(x^2 + 1)^6}$.

5. Find the antiderivative $F(x)$ for the function $f(x)$. Check your answer.

$$f(x) = \frac{2x}{1+x^2}$$