

Math 124 Quiz #6
May 13, 2008

Name: _____

Show all work.

1. (3 pts.) $\frac{d}{dt}[\ln(t \cdot e^t) + 2 \arctan(3t)] = ?$ (Do **not** simplify your answer.)

2. (4 pts.) Find the equation of the tangent line to the curve $x^2 - \sin y + y^3 = 1$ at the point $(1, 0)$.

3. (3 pts.) Find the slope of the function $y = x^{3x}$ when $x = 1$.

Note: Here are **some** derivative rules.

$$\frac{d}{dx}[f(x) \cdot g(x)] = f'(x) \cdot g(x) + f(x) \cdot g'(x)$$

$$\frac{d}{dx}[f(g(x))] = f'(g(x)) \cdot g'(x)$$

$$\frac{d}{dx}[\ln x] = \frac{1}{x}$$

$$\frac{d}{dx}[\arcsin x] = \frac{1}{\sqrt{1-x^2}}$$

$$\frac{d}{dx}[\arctan x] = \frac{1}{1+x^2}$$

$$\frac{d}{dx}[\operatorname{arcsec} x] = \frac{1}{x\sqrt{x^2-1}}$$

$$\frac{d}{dx}[\log_a x] = \frac{1}{x \ln a}$$