

Math 124 D Fall 2001
Quiz #5, Week 6

Name _____ (please print)
 Section DA

Instructions: Do all of your calculations on this sheet. You have 25 minutes.
 You can use the gold Derivative Reference sheet. Good luck.

1. Calculate these derivatives. Do NOT simplify once all the calculus is done. **Show your work.**
 Draw a box around your final answer.

(3) (a) $\frac{d}{dx}(\cos(5x) \cdot e^{2x}) =$

(3) (b) $\frac{d}{du}(\sqrt{u^3 + \tan(u)}) =$

2. Assume y is a function of x with $y(2) = 1$ and $y'(2) = -3$. At $x = 2$

(3) calculate and then evaluate $\frac{d}{dx} x^3 y^7 =$ _____ (a number)

3. Use Implicit Differentiation to calculate the value of dy/dx at the point $(1, 0)$ on the curve
 $e^y - 8x = xy^5 - x^3 - 6$. At $(1, 0)$, $\frac{dy}{dx} =$ _____ (Show your work.)

(5)

4. A small weight is suspended on a spring and $h(t)$ is the height (cm) of the weight above the floor
 at time t seconds. If $h(t) = 10 + 5\sin\left(\frac{p}{4}(t - 7)\right)$, find the velocity of the spring.

(4) (a) velocity = _____ (a function, include units)

(1) (b) at $t = 23$, the weight is moving UP DOWN NEITHER (circle one answer)

5. The Sunil function $S(x)$ has derivative $\frac{d}{dx} S(x) = \frac{x^2}{7 + x}$ but you need $\frac{d}{d\theta} S(u)$ where $u(\theta) = \sin(\theta)$.

(big hint: chain rule) $\frac{d}{d\theta} S(u) =$ _____ (a function in θ)

(2)