

Math 124
Exam 2
November 9th, 2007

Name: _____

1. Your exam contains 4 questions and 5 pages; Please make sure you have a complete exam.
2. The entire exam is worth 100 points. Point values vary and these are indicated on each problem. You have 50 minutes for this exam.
3. Make sure to **ALWAYS SHOW YOUR WORK**; you will not receive any partial credit unless all work is clearly shown. If in doubt, ask for clarification. Note: To evaluate limits, proof by graph or table of values does not suffice for full credit.
4. If you need extra space, use the back of the exam and clearly indicate this.
5. You are allowed one 8.5×11 sheet of handwritten notes (both sides). Graphing and scientific calculators are not permitted.

Problem	Total Points	Score
1	53	
2	10	
3	19	
4	18	
Total	100	

1. (53 pts.) Find the following. You do not need to simplify your answers.

(a) (9 pts.) Find $f'(x)$ if $f(x) = 2(x + 3)^7 \cdot \sin(x)$.

(b) (10 pts.) $\frac{d}{dt} \left[\frac{e^t - 4t^3}{5 + \ln t} \right] = ?$

(c) (12 pts.) Find $\frac{dy}{dx}$ if $y = (\arctan x)^{\sqrt{x}}$.

(d) (12 pts.) Find $g''(t)$ if $g(t) = \cos(\ln t) + 3t$.

(e) (10 pts.) $\frac{d}{d\theta}[e^{\sec^2\theta}] = ?$

2. (10 pts.) Evaluate the following limit. $\lim_{x \rightarrow 0} \frac{\cot x}{3\csc x}$

3. (19 pts.) Find an equation of the tangent line to the curve $\tan(xy) = x^3 + 2y - 4$ at the point $(0,2)$.

4. (18 pts.) The **velocity** of a flying monkey is given by $v(t) = (6 - t)e^{0.5t}$ in meters/second at t seconds.

(a) (9 pts.) When is the monkey at rest? When is the monkey moving forward?

(b) (9 pts.) Find the acceleration $a(t)$ of the monkey at time t .