Name (Last, First) _____ **ID #** _____

Signature _____

Lecturer _____ **Section #** _____

UNIVERSITY OF MASSACHUSETTS AMHERST
DEPARTMENT OF MATHEMATICS AND STATISTICS

Math 131 **Symbolics Exam** **11/10/05, 6:00–7:00 p.m.**

- **Turn off all cell phones and watch alarms!** Put away cell phones, iPods, etc.
- Do ***not*** "simplify" your answers.
- Use enough parentheses to show clearly how expressions are grouped together. For example, do *not* write $x + 2 \cdot x - 1$ if you really mean $(x + 2)(x - 1)$.
- Do ***not*** use a calculator; do ***not*** use any "cheat sheet" or other paper.
- Do all work in this exam booklet. You may continue work to backs of pages and the blank page at the end, but if you do so indicate where.
- Be ready to show your UMass ID card when you hand in your exam booklet.

QUESTION	PER CENT	SCORE
1	11	
2	11	
3	11	
4	11	
5	11	
6	11	
7	11	
8	11	
9	11	
Free bonus	1	
TOTAL	100	

1. $\dfrac{d}{d\,x}\left(x^{111}+111+e^{111}\right)\;=$

2. $\dfrac{d}{d\,x}\left(\dfrac{2}{x}+\sqrt{x}\right)^{131}\;=$

3. $\dfrac{d}{d\,x}\left[(3\,x+\ln x)\,(e^{x}+\tan x)\right]\;=$

4. $\dfrac{d}{d\,x}\left(\dfrac{4\,x}{4+e^{-4\,x}}\right) =$

5. $\dfrac{d}{d\,x}\left[5\,x\,\arctan(5\,x)\right] =$

6. $\dfrac{d}{d\,x}\,\ln(6\,x+6^{\,x}) =$

7. If a and b are constants, then $\dfrac{d}{d\,x}\,\cos^7\left(a\,x^7+7\,b\,x\right)\,=$

8. $\dfrac{d}{d\,x}\,\sqrt[8]{8+e^{8\,\sin x}}\,=$

9. If $x\,y^9+y-x=\frac{1}{9}$, then $\dfrac{d\,y}{d\,x}\,=\,?$

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