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

Signature _____

Lecturer _____ **Section #** _____

UNIVERSITY OF MASSACHUSETTS AMHERST
DEPARTMENT OF MATHEMATICS AND STATISTICS

Math 132 **DRAFT Exam 2** **March 26, 2009**
7:00-8:30 p.m.

Instructions

- **Turn off all cell phones and watch alarms!** Put away iPods, etc.
- 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.
- Organize your work in an unambiguous order. Show all necessary steps.
- **Answers given without supporting work may receive 0 credit!**
- Be ready to show your UMass ID card when you hand in your exam booklet.

QUESTION	PER CENT	SCORE
1	12	
2	12	
3	12	
4	12	
5	12	
6	12	
7	16	
8	12	
TOTAL	100	

The printed exam will have 1 question per 1–2 pages with space for work.

1. (12%) You have the following sample values of a function $f(x)$:

x	0	1/2	1	3/2	2
$f(x)$	1	4/5	-1	0	1

Approximate $\displaystyle\int_0^2 f(x)\,dx$ by using the **Trapezoidal Rule** with $n = \mathbf{4}$ subintervals.

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2. (12%) Evaluate:

$$\int \left(x\sqrt{x} + 5e^{-5x}\right)\,dx$$

3. (12%) Evaluate:

$$\int \arctan x\,dx$$

4. (12%) Evaluate:

$$\int \frac{3x}{x^2 - 5x + 4}\,dx$$

5. (12%) Evaluate:

$$\int \frac{\sin^3 x}{\cos^5 x}\,dx$$

6. (12%) By using the identity $x^5 = (x^3)\,x^2$, or otherwise, evaluate:

$$\int \frac{x^5}{(x^3+1)^2}\,dx$$

7. (16%) If the improper integral converges, determine its value; if it diverges, say so and indicate why:

$$\int_e^\infty \frac{1}{x(\ln x)^{3/2}}\,dx$$

8. (12%) Evaluate:

$$\int \sqrt{2x - x^2}\,dx$$