

EXTRA EXAM

Math 132

Final exam

May 6, 2011

Name: Solutions

Please print above

Course: *Math 132*

Part of your name should be printed in large letters at the top of this page of your examination booklet. Your proctor can help you find your booklet if necessary. Make sure an answer card is on top of the booklet.

- make sure you have an adequate supply of PENCILS and ERASERS and your WASHINGTON UNIVERSITY photo ID card.
- PRINT your name and the course and exam number at the top of your card. Fill in your ID number in the appropriate boxes.
- Do not use any extra NOTES, BOOKS, or SCRATCH PAPER. You should have ample space in your booklet for calculations. If you run out of space use the sides of the booklet pages for your work.
- CALCULATORS are only allowed if your instructor permits them.
- MARK your answer card neatly and make clean erasures. Sloppy card will delay grading and result in your scores being withheld until you visit the math office to see your mismarkings.
- To see your exam score, go to the math department homepage at www.math.wustl.edu and use the link to 'Exam/hw/quiz scores' under 'Resources'.
- Scores on multiple choice questions will usually appear on the website within two days.

For more information about your exam, contact your instructor or the math department office in Cupples I, room 100.

Math 132, Spring 2011 - Final Exam

NAME:

STUDENT ID NUMBER:

This exam contains sixteen questions. The first fourteen are multiple choice questions and count for five points each. There is no partial credit on these questions, so read each question carefully, check your arithmetic and make sure that you have marked the answer you intended to mark. The last two questions, which are each worth fifteen points, require written answers, and some partial credit might be given. However, no credit will be given for information that is not germane to the problem at hand. Please make sure to write your name and student ID number on the pages that include your answers to the last two questions. In fact, you will get one point on each of these two questions for writing your name and ID number legibly.

The following list of common Maclaurin series might be useful for some of the problems:

1. $\frac{1}{1-x} = \sum_{n=0}^{\infty} x^n = 1 + x + x^2 + \dots + x^n + \dots$ with $R = 1$

2. $e^x = \sum_{n=0}^{\infty} \frac{x^n}{n!} = 1 + \frac{x}{1!} + \frac{x^2}{2!} + \dots + \frac{x^n}{n!} + \dots$ with $R = \infty$

3. $\sin(x) = \sum_{n=0}^{\infty} (-1)^n \frac{x^{2n+1}}{(2n+1)!}$ with $R = \infty$

4. $\cos(x) = \sum_{n=0}^{\infty} (-1)^n \frac{x^{2n}}{(2n)!}$ with $R = \infty$

5. $\tan^{-1}(x) = \sum_{n=0}^{\infty} (-1)^n \frac{x^{2n+1}}{2n+1}$ with $R = 1$

6. $\ln(1+x) = \sum_{n=1}^{\infty} (-1)^{n-1} \frac{x^n}{n}$ with $R = 1$