Mathematics 103 Summer 2001
Final Exam Information

The date, time, and location of the final exam are:

Wednesday, June 27, 2001
9:00 am - 12:00 pm
Physics Building Room 205

Calculators: You may use a calculator on this exam. Do not replace exact expressions with decimal approximations.

Cheat Sheets: The exam is closed book. No aids other than a calculator are permitted.

Examinable Material: The final exam is comprehensive. You are responsible for all the material covered in lecture, homework, and the relevant textbook sections.

Introduction, Vectors in $\mathbb{R}^2$, Vectors in $\mathbb{R}^3$	12.1, 12.2
Vectors, Matrices, Cross Product	12.1, 12.2, 12.3
Lines and Planes	12.4
Parametric Curves, Curves and Motion in $\mathbb{R}^3$	10.4, 12.5
Cylinders and Quadric Surfaces	12.7
Functions of Several Variables; Limits and Continuity	13.1, 13.2, 13.3
Partial Derivatives	13.4
Maxima and Minima, The Second Derivative Test	13.5, 13.10
The Chain Rule	13.7
Directional Derivatives and the Gradient	13.8
Lagrange Multipliers	13.9
Double Integrals	14.1, 14.2
Area and Volume	14.3
Double Integrals in Polar Coordinates	10.2, 14.4
Triple Integrals	14.6
Triple Integrals in Cylindrical and Spherical Coordinates	12.8, 14.7
Vector Fields	15.1
Line Integrals	15.2
Independence of Path	15.3
Green's Theorem	15.4

Your Grade: The following cutoffs will apply for both the exam grade and the course grade:

A	85% - 100%
B	65% - 84%
C	50% - 64%
D	40% - 49%
F	0% - 39%

If you score an A on the final exam, then you will receive a grade of A for the course.

Make sure that this examination has 14 numbered pages

Duke University
Final Examination
June 27, 2001

Mathematics 103
Intermediate Calculus

Closed Book Examination   Time: 3 hours

Name: _____

Instructor: Michael Kozdron   **Section:** Summer 1

Read all of the following information before starting the exam:

*You have **3** hours to complete this exam. Please read all instructions carefully, and check your answers. Show all work neatly and in order, and clearly indicate your final answers. Answers must be justified whenever possible in order to earn full credit.* **No credit will be given for unsupported answers, even if your final answer is correct.** *Please keep your written answers succinct. Points will be deducted for incoherent, incorrect and/or irrelevant statements.*

Calculators are permitted, but do not replace exact expressions with decimal approximations. There are no other aids allowed.

*This test has **14** numbered pages with **17** questions totalling **200** points. Before you hand in your exam, make sure you have all of the pages, and sign the Honor Code below.*

Honor Code: *I have neither given nor received aid in the completion of this examination.*

Signature: _____

DO NOT WRITE BELOW THIS LINE
_____

Page 1 _____   Page 6 _____   Page 11 _____

Page 2 _____   Page 7 _____   Page 12 _____

Page 3 _____   Page 8 _____   Page 13 _____

Page 4 _____   Page 9 _____   Page 14 _____

Page 5 _____   Page 10 _____   TOTAL _____