

**Phy 304: Math Methods : Spring 2004**

**Exam 6: Time Allowed: (1 hr 30 minutes)**

From Chapter 6 (Boas), solve the following problems. Open book.  
Show your work NEATLY.

- 10.7
- 10.10
- 11.12
- 11.20
- 12.21
- 12.27
- 12.29

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**Physics 304: Mathematical Methods in Physics**

**Syllabus: Spring 2004**

Location and times:

Lectures: MTThF 11:00-11:50AM in Room C101, CNS

**Textbooks:**

Required: Mathematical Methods in the Physical Sciences by Mary L. Boas, second edition, John Wiley

Recommended: Schaum's Outline Series Mathematical Handbook of Formulas and Tables by Murray R. Spiegel

**Instructor:**

Narendra Jaggi C007B CNS Office hours: M,T,Th,F 9:00 - 9:50AM

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**Course Overview**

This is a slightly ambitious course where we expect you to first learn and then go on to refine a large repertoire of mathematical techniques that are needed in physics and engineering. In one

semester, we will try to understand as many mathematical techniques as are covered at many other universities over a period of two semesters. And we will expect you not simply to be familiar with, but to develop a certain level of fluency with the following mathematical ideas and methods: Complex Algebra; Linear Algebra (vectors, matrices etc.); Analytic Geometry; Vector Calculus ( Div, Grad, Curl, and all that, Green's and Stokes' theorem); Differential Equations; Calculus of Variations; Introduction to Complex Analysis. Additionally, we will also review the following topics that you studied in your calculus course: Infinite Series; Partial Differentiation; Multiple Integrals.

Because of the ambitious nature of the goals of this course, the students are required to assume a lot of personal responsibility for their growth. In particular, the student is expected to try to understand all basic ideas and notations by reading the book before coming to class. Class time will be utilized for discussions of sophisticated or advanced topics, for integrating ideas and developing connections between different areas of mathematics, and for solving a lot of problems. If the thought of mastering so much mathematics in one semester doesn't excite you, you are in the wrong place!

**Assignments and Tests:**

Your first test is on Monday, January 12. It will be drawn from the following problems from chapter 1 of your textbook.

1.6.1 through 1.6.30

1.9.1 through 1.9.21

1.10.1 through 1.10.12

1.10.2

There will be seven to ten tests during the semester, usually announced approximately a week in advance.

**Assessment:**

Tests: 85%

In-class participation: 15%