Information for Final Exam

1- The test will be held on Wednesday, 12/11 from 8:00 -10:59 a.m. in Center 101.

2- You must bring a Blue Book to the exam. (You might want to bring two.)

3- Please bring your UCSD student ID to the exam and expect it will be checked.

4- You may bring two 8.5”*11” sheets of handwritten notes (written on both sides) to the exam.

5- No calculators (or other electronic devices)!!

6- You must know your discussion section ID:

Ali Behzadan

- B01, Th 8:00p - 8:50p, APM B402A
- B02, Th 5:00p - 5:50p, APM B402A
- B03, Th 6:00p - 6:50p, APM B402A
- B04, Th 7:00p - 7:50p, APM B402A

Ruibo Ma

- B05, Th 5:00p - 5:50p, SEQUO 147
- B06, Th 6:00p - 6:50p, SEQUO 147
- B07, Th 7:00p - 7:50p, SEQUO 147
- B08, Th 8:00p - 8:50p, SEQUO 147

If you attend a different section from the one in which you are enrolled, specify which is which on your blue book. For example you may write “I am enrolled in B01 but I attend B07”.

Topics

The final exam is cumulative and covers all topics discussed in class **EXCEPT sections 9.1 and 9.2 (differential equations)**. In particular, make sure you are familiar with the following topics:

1- The definite integral: (Section 5.2)

1-1) Relationship to area.

1-2) Properties of the definite integral.

2-The Fundamental Theorem of Calculus, Parts I and II: (Sections 5.3 and 5.4)

2-1) Calculating definite integrals.

2-2) Constructing antiderivatives.

3- Net change as the integral of a rate. (Section 5.5)

4-Substitution Method. (Section 5.6)

5-The area between curves. (Section 6.1)

6- Finding volume using the slicing technique. (Section 6.2)

7-Finding the volume of a solid of revolution. (Section 6.3)

8- Polar coordinates: (Sections 11.3 and 11.4)

8-1) Converting between polar and rectangular coordinates.

8-2) Polar equation of a line.

8-3) Area in polar coordinates.

9-Complex numbers: (Supplement)

9-1) Arithmetic, complex conjugation, polar form of a complex number.

9-2) de Moivre's Theorem (page 9) .

9-3) Finding nth roots of complex numbers.

9-4) Complex exponentials.

9-5) Integration using complex exponentials.

10- Integration by parts. (Section 7.1)

11-Trigonometric integrals. (Section 7.2)

You do not need to memorize the reduction formulas on page 410. If needed, those formulas will be given to you on the test.

12- Computing integrals using Trigonometric Substitution. (Section 7.3)

13- Computing integrals using the Method of Partial Fractions. (Section 7.5)

14-Improper integrals: (Section 7.6)

14-1) Type I and Type II improper integrals.

14-2) Computing improper integrals using the limit definition.

14-3) The Comparison Test for convergence / divergence of improper integrals.

Make sure you know how to prove Theorem 1 in page 438 (Convergence of the p-integral).

15- Numerical integration: Trapezoidal Rule, Midpoint Rule. (Section 7.8)

16- Convergence of series: (Chapter 10)

16-1) Divergence Test

16-2) Integral Test

Make sure you know how to prove Theorem 3 in page 561 (Convergence of p-series).

16-3) Comparison Test

16-4) Limit Comparison Test

16-5) Ratio Test

16-6) Root Test

16-7) Absolute convergence versus conditional convergence

You do NOT need to know the <u>Leibniz Test</u> for the final exam.

16-8) Finding the radius of convergence and interval of convergence for a power series.

16-9) Finding the Taylor series representation of a function.

Every effort is made to make the exam questions clear, correct, and straightforward. However, minor errors are sometimes detected during the exam. Should this occur, the appropriate correction will be written on the board.