Calculus II (110.109), Spring 2015 Course Calendar

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April 27, 2015

Please check regularly for updates and try to come prepared for the next class.

Week 1 (Sections 7.1 and 7.2)

- January 26, 2015
  Review of standard integrals and basic methods of integration: substitution etc.

- January 28, 2015
  Integration by parts: proof and basic examples

- January 30, 2015
  More examples of integration by parts, trigonometric integrals

Week 2 (Sections 7.2 and 7.3)

- February 02, 2015
  Continuation of trigonometric integrals of odd and even powers involving sine, cosine functions and tan, sec functions

- February 04, 2015
  More examples of trigonometric integrals, integration by trigonometric substitution (section 7.3)

- February 06, 2014
  Examples of trigonometric substitution

Week 3 (Sections 7.4 and 9.1)

- February 09, 2015
  Integration of rational functions using partial fractions
• February 11, 2015
  Integration of rational functions using partial fractions (contd.)

• February 13, 2015
  Differential equations, modeling and early examples - simple pendulum, displacement of mass attached to a spring

**Week 4 (Sections 9.1, 9.2 and 9.3 )**

• February 16
  Electromagnetic circuit, model for population growth (logistic model), direction fields

• February 18
  Direction fields with examples, separable differential equations

• February 20
  More examples of separable differential equations

**Week 5 (Sections 9.4, 9.5 and 10.1) **

• February 23
  Population growth model revisited, linear differential equations, integration factors

• February 25
  More examples of integration factors, parametrized curves

• February 27
  More examples of parameterized curves

**Week 5 (Sections 10.2 and 10.3)**

• March 02
  Calculus with parametric curves - derivative, area, arc length - illustration with cycloid as example

• March 04
  In class midterm test

• March 06
  Class cancelled
Week 6 (Section 10.3 )

- March 08
  Revisit calculus with parametric curves, polar coordinates, polar curves

- March 10
  More examples of sketching of polar curves, areas and lengths in polar coordinates

- Examples of areas and lengths in polar coordinates

Week 7

Spring Break

Week 8 (Section 7.8)

- March 23
  Improper integrals - definition and types (infinite intervals and discontinuous integrand)

- March 25
  Example problems of improper integrals

- March 27
  Example problems of improper integrals (cont.)

Week 9 (Section 11.1)

- March 30
  Sequences and their limits

- April 01
  Limit laws for sequences, Sandwich theorem, monotone convergence theorem

- April 03
  Examples of limits of sequences, monotone convergence theorem, mathematical induction

Week 10 (Sections 11.2 and 11.3)

- April 06
  Infinite series with examples, convergence of geometric series
• April 08
  Convergence tests - integral test with examples

• April 10
  Integral test with examples (cont.)

Week 11

• April 13
  Review of Midterm II

• April 15
  Midterm II

• April 17
  Comparison test with examples

Week 12

• April 20
  Ratio and Root tests with examples

• April 22
  Representation of functions as power series, interval of convergence, radius of convergence

• April 24
  Taylor Series

Week 13

• April 27
  Examples of Taylor series, when is a Taylor series equal to the function?

• April 29
  Taylor series of binomial functions, further examples

• May 01 (Finale)
  Applications of Taylor series