Department of Mathematics
Johns Hopkins University

110.113 Honors Single Variable Calculus Course Syllabus

The following list of topics is considered the core content for the course 110.113 Honors Single Variable Calculus.

Text: <u>Calculus,</u> *4th Edition*, Spivak, M., Publish or Perish, July 2008, **ISBN-10:** 0914098918, **ISBN-13:** 978-0914098911

Course Topics

- **Preliminaries (1- weeks)**
    - o 1 Basic Properties of Numbers
    - o 2 Number of Various Sorts

- **Foundations (3 weeks)**
    - o 3 Functions
    - o 4 Graphs
    - o 5 Limits
    - o 6 Continuous Functions
    - o 7 Three Hard Theorems
    - o 8 Least Upper Bounds

- **Derivatives and Integrals (5 weeks)**
    - o 9 Derivatives
    - o 10 Differentiation
    - o 11 Significance of the Derivative
    - o 12 Inverse Functions
    - o 13 Integrals
    - o 14 The Fundamental Theorem of Calculus
    - o 15 The Trigonometric Functions
    - o 18 The Logarithm and Exponential Functions
    - o 19 Integration in Elementary Terms

- **Infinite Sequences and Series (3+ week)**
    - o 20 Approximations to Polynomial Functions
    - o 22 Infinite Sequences
    - o 23 Infinite Series
    - o 24 Uniform Convergence and Power Series