



MA 327 Aug 3:0

Topics in Analysis

Instructor

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Email:

Department: Mathematics

Course Time:

Lecture venue:

Detailed Course Page:

Announcements

Brief description of the course

In this course we begin by stating many wonderful theorems in analysis and proceed to prove them one by one. In contrast to usual courses (where we learn techniques and see results as applications of those techniques). We take a somewhat experimental approach in stating the results and then exploring the techniques to prove them. The theorems themselves have the common feature that the statements are easy to understand but the proofs are non-trivial and instructive. And the techniques involve analysis.

Prerequisites

Linear algebra, Topology, Real analysis (including measure theory), Complex analysis, Functional analysis

Syllabus

Isoperimetric inequality, infinitude of primes in arithmetic progressions, Weyl's equidistribution theorem on the circle, Shannon's source coding theorem, uncertainty, principles including Heisenberg's law for eigenvalue of a random matrix, Picard's theorem on the range of an entire function, principal component analysis to reduce dimensionality of data.

Course outcomes

Some beautiful theorems in analysis. More importantly basic techniques needed to work in analysis.

Grading policy

20% homework, 30% midterm, 50% final (could include presentation)

Assignments

Resources

<http://math.iisc.ernet.in/~manju/TA2017/topicsinanalysis2017.html>