The Department of Mathematics
2022–23–A term

Course Name  Infinitesimal Calculus 1
Course Number  201.1.1011
Course web page  https://www.math.bgu.ac.il/en/teaching/fall2023/courses/infi1
Lecturer  Prof. Ilan Hirshberg, <ilan@bgu.ac.il>, Office 203
Office Hours  https://www.math.bgu.ac.il/en/teaching/hours

Abstract

Requirements and grading

Course topics

Axioms of the reals. Sequences: limits, monotone sequences, the Bolzano-Weierstrass theorem, Cauchy’s criterion, the number e. Limits of functions. Continuous functions: equivalent definitions of continuity, properties of the elementary functions, the exponential function, the Intermediate Value Theorem, existence of extrema in closed and bounded sets, uniform continuity and Cantor’s theorem. Introduction to derivatives: the definition of the derivative and differentiation rules, the derivative of an inverse function, derivatives of elementary functions, Fermat’s theorem, Rolle’s theorem and Lagrange’s Mean Value Theorem.

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1Information may change during the first two weeks of the term. Please consult the webpage for updates