אוניברסיטת
בן-גוריון בנגב

The Department of Mathematics

2019–20–A term

Course Name Calculus 1 for engineering

Course Number 201.1.9711

Course web page
https://www.math.bgu.ac.il//en/teaching/fall2020/courses/calculus-1-for-engineer

Office Hours https://www.math.bgu.ac.il/en/teaching/hours

Abstract

Requirements and grading[1]

Course topics

In this course the basic concepts of one-dimensional analysis (a limit, a derivative, an integral) are introduced and explored in dffierent applications: graphing functions, approximations, calculating areas etc.

.1 Limit of a function, continuity.

.2 Derivative, basic derivative formulas.

.3 Derivative of an inverse function; derivative of a composite function, the chain rule; derivative of an implicit function.

.4 Derivatives of high order.

.5 The mean value problem theorem. Indeterminate forms and l'Hopital's rule.

.6 Rise and fall of a function; local minimal and maximal values of a function.

.7 Concavity and points of inflection. Asymptotes. Graphing functions.

.8 Linear approximations and dffierentials. Teylor's theorem and approximations of an arbitrary order.

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

9. Indefinite integrals: definition and properties.

10. Integration methods: the substitution method, integration by parts.

11. Definite integrals. The fundamental theorem of integral calculus (Newton-Leibniz's theorem).

12. Calculating areas.

Bibliography   **Thomas & Finney**, *Calculus and Analytic Geometry*, 8th Edition, Addison-Wesley (World Student Series).