אוניברסיטת
בן-גוריון בנגב

The Department of Mathematics

2018–19–A term

Course Name Calculus 1 for engineering

Course Number 201.1.9711

Course web page
`https://www.math.bgu.ac.il//en/teaching/fall2019/courses/diffrential-and-integra`

Lecturer Prof. Amnon Besser, <bessera@bgu.ac.il>, Office 212

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.

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

אוניברסיטת
בן-גוריון בנגב

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

.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).