אוניברסיטת
בן-גוריון בנגב

The Department of Mathematics

2020–21–B term

Course Name Calculus 1 for engineering

Course Number 201.1.9711

Course web page
`https://www.math.bgu.ac.il//en/teaching/spring2021/courses/diffrential-and-integral-calculus-me1`

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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 different 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.

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

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 differentials. 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).