Calculus 1 B : Description

Module	block 1B, year 2019 - 2020
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Like Mathematics B1, the course *Mathematics B2* is also a course in the line of basic Mathematics. But Math B2 will treat more new concepts as Math B1 did.

Math B2 starts with a well known topic: integration theory. The integral of a function of one variable is introduced and integration techniques such as substitution and integration by parts are discussed. Some applications are presented. The follow-up course Mathematics D1 will extend the integral calculus for functions of two or three variables.

Next, a short introduction into power series is given, with the Taylor series as its main example.

Another new concept is the notion of differential equation. The idea behind a differential equation is discussed. A method to solve first order linear differential equations is presented in more detail. Also a basic method to solve second order linear differential equations is presented, but details are left out. In this method we will make use of the system of complex numbers. This system is an extension of the real number system and gives solutions to all algebraic equations. In this number system the equation $x^2 + 1 = 0$ has a solution. Attention is paid to the geometric representation of a complex number and to algebraic operations on complex numbers.