

Discrete Mathematics – Toán Rời Rạc

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2 Miscellaneous

3 Wikipedia’s

3.1 Wikipedia/discrete mathematics

“Discrete mathematics is study of **mathematical structures** that can be considered “discrete” (in a way analogous to **discrete variables**, having a **bijection** with \mathbb{N}) rather than “continuous” (analogously to **continuous functions**). Objects studied in discrete mathematics include integers, **graphs**, & **statements** in **logic**. By contrast, discrete mathematics excludes topics in “continuous mathematics” e.g. real numbers, calculus or **Euclidean geometry**. Discrete objects can often be **enumerated** by integers; more formally, discrete mathematics has been characterized as branch of mathematics dealing with **countable sets** (finite sets or sets with same **cardinality** as \mathbb{N}). However, there is no exact definition of term “discrete mathematics”.

Set of objects studied in discrete mathematics can be finite or infinite. Term *finite mathematics* is sometimes applied to parts of field of discrete mathematics that deals with finite sets, particularly those areas relevant to business.

Graphs e.g. these are among objects studied by discrete mathematics, for their interesting **mathematical properties**, their usefulness as models of real-world problems, & their importance in developing computer algorithms.

Research in discrete mathematics increased in latter half of 20th century partly due to development of **digital computers** which operate in “discrete” steps & store data in “discrete” bits. Concepts & notations from discrete mathematics are useful in studying & describing objects & problems in branches of computer science, e.g. **computer algorithms**, **programming languages**, **cryptography**, **automated theorem proving**, & **software development**. Conversely, computer implementations are significant in applying ideas from discrete mathematics to real-world problems.

Although main objects of study in discrete mathematics are discrete objects, **analytic** methods from “continuous” mathematics are often employed as well.

In university curricula, discrete mathematics are discrete objects, **analytic** methods from “continuous” mathematics are often employed as well.

In university curricula, discrete mathematics appeared in 1980s, initially as a computer science support course; its contents were somewhat haphazard at time. Curriculum has thereafter developed in conjunction with efforts by **ACM** & **MAA** into a course that is basically intended to develop **mathematical maturity** in 1st-year students; therefore, it is nowadays a prerequisite

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for mathematics majors in some universities as well. Some high-school-level discrete mathematics textbooks have appeared as well. At this level, discrete mathematics is sometimes seen as a preparatory course, like [precalculus](#) in this respect.

[Fulkerson Prize](#) is awarded for outstanding papers in discrete mathematics.

3.1.1 Topics

3.1.2 Challenges

” – [Wikipedia/discrete mathematics](#)