

# Patterns of Proof

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## 证明的方式

## The Axiomatic Method

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## 公理化方法

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The standard procedure for establishing truth in mathematics was invented by Euclid, a mathematician working in Alexandria, Egypt around 300 BC. His idea was to begin with five assumptions about geometry, which seemed undeniable based on direct experience. For example, one of the assumptions was "There is a straight line segment between every pair of points." Propositions like these that are simply accepted true are called axioms.

生活于公元前300年埃及亚历山大港的数学家欧几里得，发明了数学中证实命题正确性的标准步骤。他的思想发轫于几何学上的五个假设，它们基于直接经验，似乎毋庸置疑。例如，其中一个假设是“两点之间只有一个直线段。”像这样不证自明的命题称为公理。

Starting from these axioms, Euclid established the truth of many additional propositions by providing "proofs". A proof is a sequence of logical deductions from axioms and previously-proved statements that concludes with the proposition in question.

从这些公理开始，通过提供“证明”，欧几里得证实了许多附加命题的正确性。证明是一系列逻辑推论，它们从公理与之前证实的陈述开始推定讨论中的命题。

There are several common terms for a proposition that has been proved. The different terms hint at the role of the proposition within a larger body of work.

- Important propositions are called *theorems*.
- A *lemma* is a preliminary proposition useful for proving later propositions.
- A *corollary* is a proposition that follows in just a few logical steps from a lemma or a theorem.

可用多个常见术语来指代已被证明的命题。不同的术语暗示着该命题在更大工作体系中的地位。

- 重要的命题称作**定理**。
- **引理**是个可用于证明后续命题的初级命题。
- 从某个引理或定理开始，仅推导几步，就可得到叫做**推论**的命题。

