

New blueprint test

Thomas Zhu

September 21, 2025

Input a definition (or theorem) defined in Lean:

**Definition 1** (Natural numbers).

Input the contents (including definitions, theorems, and module docstrings) of an entire module:

## 0.1 Natural numbers

**Definition 2** (Natural numbers).

### 0.1.1 Addition

Here we define addition of natural numbers.

**Definition 3.** Natural number addition.

**Theorem 4.** *For any natural number  $a$ ,  $0 + a = a$ , where  $+$  is Def. 3.*

*Proof.* The proof follows by induction. □

**Theorem 5.** *For any natural numbers  $a, b$ ,  $(a + 1) + b = (a + b) + 1$ .*

*Proof.* Proof by induction on  $b$ . □

**Theorem 6.** *For any natural numbers  $a, b$ ,  $a + b = b + a$ .*

*Proof.* The base case follows from 4.

The inductive case follows from 5. □

### 0.1.2 Multiplication

**Definition 7.** Natural number multiplication.

**Theorem 8.** *For any natural numbers  $a, b$ ,  $a * b = b * a$ .*

*Proof.* □

### 0.1.3 Fermat's Last Theorem

**Theorem 9** (Taylor–Wiles). *Fermat's last theorem.*

*Proof.* See [1, 2]. □

In the docstring, usual Markdown features and math mode are supported (by MD4Lean), with additional support for citations like [1] using [square brackets] and references to other nodes like 4 using inline ``code``.

You can also directly input raw LaTeX, e.g. as follows:

# Bibliography

- [1] Andrew Wiles (1995) *Modular elliptic curves and Fermat's last theorem*, Annals of Mathematics, 141(3), 443–551.
- [2] Richard Taylor and Andrew Wiles (1995) *Ring-theoretic properties of certain Hecke algebras*, Annals of Mathematics, 141(3), 553–572.