

# 1 Demo of proof-at-the-end

NB: This file is just a demo of proof-at-the-end. You can find the documentation, sources, and example of proof-at-the-end at <https://github.com/leo-colisson/proof-at-the-end>.

**Theorem 1.1** (Yes I can have a title). *Simplicity is luxury, I am a default theorem.*

See proof on page 3

And I can refer to my theorems using classic labels, like in Theorem 1.1.

**Theorem 1.2** (Different categories). *You can also create several categories, and put the proofs in different sections.*

$$2\Delta = \Delta + \Delta$$

See proof on page 4

**Theorem 1.3** (I am restatable). *I am a restatable theorem, go in Appendix you will see ;-)*

See proof on page 3

**Theorem 1.4.** *You can easily turn it back into a normal theorem!*

*Proof.* And keep the proof with you! □

You can also put comments that appear only in the appendix.

Or that appears in both and with references Theorem 4.1!

**Theorem 1.5.** *And you can duplicate the proof, here AND in appendix ;)*

See proof on page 3

*Proof.* I am a proof that is everywhere, practical if you want to use syntex while you write the proof ;) □

**Lemma 1.6.** *You can mix it with lemmas... Or any other theorem-like environment easily!*

See proof on page 3

And also you can put both the theorem and the proof at the end, like for Theorem 4.1!

You can also remove the link to the theorem:

**Theorem 1.7.** *I don't like links in proofs.*

See proof on page 3

Or keep the link, but remove the reference (practical for stored versions):

**Theorem.** *I don't like numbers.*

See proof on page 3

**Theorem 1.8.** *Change the text/languages of the link: Il est même possible de changer la langue du texte du lien!*

Voir preuve page 3

And of course it is easy to define custom shortcuts, using in prelude:

```
\NewDocumentEnvironment{frenchthm}{0{}}+b}{%  
  \begin{theoremEnd}[french]{thm}[#1]%  
    #2%  
  \end{theoremEnd}%  
}
```

**Theorem 1.9** (My own environment). *You can then create your own environment from other styles using*

*Proof.* That's quicker :D □

**Theorem 1.10** (My own environment). *You can use options also with your custom environments.*

See proof on page 3

**Theorem 1.11.** *And you can remove the title and have options.*

See proof on page 3

**Theorem 1.12** (Yes I can have no proof). *Proof is useless. You can do do it. And see, I can include other environments inside me ;)*

A    B  
C    D

**Theorem 1.13** (Manual restate). *A theorem can be manually restated*

See proof on page 3

**Theorem 1.14.** *I can also write a sketch of proof, and put the full proof in appendix.*

*Proof.* Hint: look at the alias options. □

See full proof on page 4

## 2 Section with restate before theorem

**Theorem 3.1** (Title). *This theorem has been introduced in section 2 before the real definition, but the real definition is in section 3, more precisely here: Theorem 3.1.*

**Theorem 2.1.** *And this is a normal theorem*

See proof on page 4

### 3 Section with late theorems

**Theorem 3.1** (Title). *This theorem has been introduced in section 2 before the real definition, but the real definition is in section 3, more precisely here: Theorem 3.1.*

See proof on page 4

### 4 Section with standard proofs

*Proof of Theorem 1.1.* Let's be simple. □

**Theorem 1.3** (I am restatable). *I am a restatable theorem, go in Appendix you will see ;-)*

*Proof of Theorem 1.3.* I am a proof of a restatable theorem. □

See, I am a simple comments with math  $\delta = b^2 - ac$  and references Theorem 4.1. You can also use the environment syntax. Or that appears in both and with references Theorem 4.1!

*Proof of Theorem 1.5.* I am a proof that is everywhere, practical if you want to use syntex while you write the proof ;) □

*Proof of Lemma 1.6.* See, I'm the proof of a lemma! □

**Theorem 4.1.**  $\delta = b^2 - 4ac$  *You can also put theorems only at the end.*

*Proof of Theorem 4.1.* See, I'm the proof of a lemma that is only at the end! □

**Theorem 1.7.** *I don't like links in proofs.*

*Proof.* Yes, I like being lost, but not too lost, so I prefer to restate as well! □

*Proof.* Yes, I hate numbers, but I like links. □

*Preuve du Theorem 1.8.* Si c'est pas beau ;) □

*Proof of Theorem 1.10.* That's quicker with the proof at the end :D □

*Proof of Theorem 1.11.* Just leave empty title. □

**Theorem 4.2** (My second own environment). *My normal theorem is moved at the end!*

*Proof of Theorem 4.2.* Custom environments are practical no ;) □

*Proof of Theorem 1.13.* Use restate command for that! (see section 6 for an example) □

*Proof of Theorem 1.14.* You just use “see full proof” as an option □

*Proof of Theorem 2.1.* With a normal proof □

*Proof of Theorem 3.1.* To state a theorem before the initial definition, use the `theoremEndRestateBefore` environment where you first want to state the theorem, with a unique name in the second mandatory argument, and when you want to insert the theorem for the second time, use the usual `theoremProofEnd` command with the same unique name as before in place of the theorem definition and the “restated before” option. □

## 5 Section with important proofs only

*Proof of Theorem 1.2.* See, I am in another section! And I refer to Theorem 1.1 even in the proof. □

## 6 Section with manual restate

I like to manually restate theorems:

**Theorem 1.13** (Manual restate). *A theorem can be manually restated*