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`. Note that this file is getting a bit big but it should contain more or less everything that is possible in this lib as it's also used to "test" the library.

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 (Changing link)**.** *It is possible to change the link.*

See proof at section 4

Theorem 1.3 (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 1.4 (I am restatable)**.** *I am a restatable theorem, go in Appendix you will see ;-)*

See proof on page 3

Theorem 1.5. *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 1.6. *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 synctex while you write the proof ;) □

Lemma 1.7. *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 1.8. *I don't like links in proofs.*

See proof on page 4
Or keep the link, but remove the reference (practical for stared versions):

Theorem. *I don't like numbers.*

See proof on page 4

Theorem 1.9. *Change the text/languages of the link: Il est même possible de changer la langue du texte du lien!*

Voir preuve page 4
And of course it is easy to define custom shortcuts, using in prelude:

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

Theorem 1.10 (My own environment)**.** *You can then create your own environment from other styles using*

Proof. That's quicker :D □

Theorem 1.11 (My own environment)**.** *You can use options also with your custom environments.*

See proof on page 4

Theorem 1.12. *And you can remove the title and have options.*

See proof on page 4

Theorem 1.13 (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 1.14 (Manual restate)**.** *A theorem can be manually restated*

See proof on page 4

Theorem 1.15. *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
It should also deal with protected commands: `mathtt`:

Theorem 1.16 (Title Δ et `Gad`)**.** *You can use commands that should be protected* `See`*!*

Theorem 1.17 (Deal with paragraphs)**.** *You can have a theorem with several paragraphs.*

See 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. □

Proof of Theorem 1.2. Here I'm using "text link section". □

Theorem 1.4 (I am restatable)**.** *I am a restatable theorem, go in Appendix you will see ;-)*

Proof of Theorem 1.4. 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 1.6. I am a proof that is everywhere, practical if you want to use synctex while you write the proof ;) □

Proof of Lemma 1.7. 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 1.8. *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 1.9. Si c'est pas beau ;) □

Proof of Theorem 1.11. That's quicker with the proof at the end :D □

Proof of Theorem 1.12. 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 1.14. Use restate command for that! (see section 6 for an example) □

Proof of Theorem 1.15. You just use "see full proof" as an option □

Proof of Theorem 1.17. And I also like to have big proofs.

With several paragraphs. □

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 1.3. 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 1.14 (Manual restate)**.** *A theorem can be manually restated*