

mod

To create a type of theorem, be it *Theorem*, *Lemma*, *Corollary*, whatever, do this.

Theorem. *This is the contents of Theorem. Notice that it does not have a counter.*

That means it doesn't matter how many *Theorems* you have, they'll always show up as **Theorem**.

Theorem. *Here is another theorem.*

Theorem. *And another.*

On the other hand, *Lemmas* have a counter, since it was defined without the asterisk.

Lemma 1. *Yes, I know this isn't a lemma, but see how there's a counter?*

And since *Note* shares the same counter as *Lemma*, the counter will change whenever we define a new *Note* or *Lemma*.

Note 2. *Hello World! New counter!*

Lemma 3. *Counter changes again!*

However, *Corollarys* are defined to be subordinate to *Lemma* counters, take a look.

Corollary 3.1. *Hello, I'm a corollary.*

Corollary 3.2. *What a coincidence, me too!*

Once the "superior" counter changes, in this case *Lemma*, *Corollarys*' counter will also change.

Note 4. *Our counter changed!*

Corollary 4.1. *It should be self-explanatory why my counter is the way it is now.*

We can also give names to theorems, like this.

Theorem (Stoke's Theorem). *For a closed surface oriented counter-clockwise,*

$$\int_C \vec{F} \cdot d\vec{r} = \iint_S (\nabla \times \vec{F}) \cdot d\vec{S}$$

Note 5 (Some arbitrary title). *It works for Note, Lemma, etc.*

It's extremely simple to create a proof.

Claim: an irrational number raised to an irrational power can be rational.

Proof. Notice that $\sqrt{2} \in \mathbb{R}$, $\notin \mathbb{Q}$. Therefore, we know that $\sqrt{2}^{\sqrt{2}} \in \mathbb{R}$ but can be $\in \mathbb{Q}$ or $\notin \mathbb{Q}$.

Suppose $\sqrt{2}^{\sqrt{2}} \in \mathbb{Q}$, we're done.

Suppose $\sqrt{2}^{\sqrt{2}} \notin \mathbb{Q}$, we can then use this value and raise it to another power of $\sqrt{2}$.

$$(\sqrt{2}^{\sqrt{2}})^{\sqrt{2}} = \sqrt{2}^{\sqrt{2} \cdot \sqrt{2}} = \sqrt{2}^2 = 2 \in \mathbb{Q}$$

Q.E.D

Do the following to create a bullet point list (unnumbered). If the type of list is not specified to be "bullet", it'll be defaulted to be ordered.

- item 1.
- item 2. this will go to the end of item 2, and not be in a new line, because it's missing the two dots in the beginning.
- item 3.
item 3.5, notice that this doesn't have a bullet in front of it.
- item 4.
 - 1. nested lists are also allowed!
 - 2. this one is ordered.
 - (a) and another nested list!
 - 3. just remember to end as many lists as you started.

or it'll be embarrassing, just like this here...

Oops, wrong indentation!

Or better yet, it'll transcribe correctly, but will not **compile** correctly if an `..endlist` is missing!

It might be helpful to indent the lists in the code, so you won't forget what level of indentation you're on. LaTeX is great in the sense that indentation doesn't matter **that** much.

Note 6. *The transcribed .tex files will automatically be indented wherever there are items in a list.*