How to Get Rid of Ghosts

Mathematics Conference for the Mysterious and Magical

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My motivation in giving this talk is to get a Ph.D. . . .

Here is my definition...

Definition (Ph.D.)

A Ph.D. is something you sweat and cry for.

Example

I studied so hard for my qualifying exam I replaced my childhood memories with an entire chapter of Hartshorne's *Algebraic Geometry*.

Theorem (D.)

For all n, we have $n^2 = n \cdot n$.

Proof. With massive loss of generality, let $n = 1$. Then we have

$$1 = 1^2 = 1 \cdot 1 = 1$$

Therefore by overwhelming hope, it must always be true. □

Most algebra you need to be true is true.

Corollary

For all $n, m \in \mathbb{N}$, $(n+m)^2 = n^2 + m^2$.

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Now we pause for the big reveal...

- I am clearly a master of logic.
- Masters of logic get Ph.D's.
- I have earned this.

Finally! Some Math!

Here is some Math: $\int_1^\alpha \frac{x^2}{\sin x^2}\,dx$ and $\sum i^2$.

But you could make this Math big inline with 'displaystyle': $\displaystyle\int_1^\alpha \frac{x^2}{\sin x^2}\,dx$ and $\displaystyle\sum i^2$.

And even more Math:

$$\oint \vec{\nabla} \times \vec{F}\, dV = \sum_{n=1}^{\infty} \overline{p} \begin{pmatrix} a & b \\ c & d \end{pmatrix}$$

Ph.D. plz...

Questions?

For simplicity, let $n = q - 1$.
Observe that, when $k \neq 0$,

$$\sum_{i=0}^{n-1} \alpha^{ik} = 0, \forall \alpha \in \mathbb{Z}_q^*,$$

and when $k = 0$, obviously

$$\sum_{i=0}^{n-1} \alpha^{ik} = \sum_{i=0}^{n-1} \alpha^0 = n, \forall \alpha \in \mathbb{Z}_q^*.$$

$$
\begin{aligned}
f(i) &= \frac{1}{n} \sum_{k,j} f(j) \alpha^{kj-ki} \\
&= \frac{1}{n} \sum_{k,j} f(j) \alpha^{kj} \alpha^{-ik} \\
&= \frac{1}{n} \sum_{k} F(k) \alpha^{-ik}
\end{aligned}
$$