Pythagorean Triple: $(a,b,c) \in \mathbb{Z}^3$
such that $c^2 = a^2 + b^2$

Theorem: A pythagorean triple exists.

Proof: $c = 5,\ a = 4,\ b = 3$. Then $c^2 = a^2 + b^2$.

Fermat Triple: $(a,b,c) \in \mathbb{Z}^3$. $a \neq 0, b \neq 0, c \neq 0$.
so that $c^3 = a^3 + b^3$

Theorem: No Fermat Triple exists. $\left[\sim(\exists x,\ x \text{ Fermat triple})\right]$
$\Leftrightarrow$
$\forall x,\ x$ is not a fermat triple.

Proof: Typically by contradictn.
Assume a,b,c satisfies $c^3 = a^3 + b^3$
$\vdots$
deduce a contradiction.