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A Proof of Fermat's Last Theorem

In this paper, I provide a proof of Fermat's last theorem which states that there is no integer solution for a, b, and c in the equation $a^n + b^n = c^n$ where $n \in \mathbb{Z}$ and $n > 2$. [1]

Proof:

$$a^n \cdot b^n = c^x$$

$$\ln(a^n \cdot b^n) = \ln(c^x)$$

$$\ln(a^n) + \ln(b^n) = \ln(c^x)$$

$$n \ln(a) + n \ln(b) = x \ln(c)$$

$$x = \frac{n[\ln(a) + \ln(b)]}{\ln(c)}$$

$$x = \frac{n[\ln(ab)]}{\ln(c)}$$

$$n = \frac{x \ln(c)}{\ln(ab)}$$

Is $x = n$? If $x = n$, then $a^n \cdot b^n = c^n$ is true.

$$x = n = \frac{n[\ln(ab)]}{\ln(c)} = \frac{x \ln(c)}{\ln(ab)}$$

$$n[\ln(ab)]^2 = x[\ln(c)]^2$$

$$n = \left(\frac{\ln(c)}{\ln(ab)}\right)\left(\frac{x \ln(c)}{\ln(ab)}\right)$$

$a^n \cdot b^n = c^x$ is equal to $a^n \cdot b^n = c^n$ if $\frac{\ln(c)}{\ln(ab)} = 1$, or else $x \neq n$.

Suppose $\frac{\ln(c)}{\ln(ab)} = 1$, then $a^n \cdot b^n = c^n$ is true, but $a^n \cdot b^n \neq a^n + b^n$; thus, $a^n + b^n \neq c^n$.

Reference

[1] Singh, pp. 18–20.