

Fermat's theorem. The number $D=A^n+B^n-C^n < 0$

In Memory of my MOTHER

The notations in base $U=A+B-C$ [an option: in base $U-1$]:

A' – the last digit of the number A ; A'' – the number A without the last digit, the « head » of the number.

So, let's assume that for natural numbers A, B, C and $n > 2$ there is equality:

1°) $A^n+B^n-C^n=0$, where, as it is known,

1a°) $A+B > C > A > B > U=A+B-C > 0$, $A=A'+A''$, $B=B'+B''$, $C=C'+C''$,

1b°) $A''+B''-C''=0$.

Proof of the FLT

Let's assume that $C'=0$ and $B'=A'=U/2$. Then $\min B''=1$, $\min A''=1$, $C=1+1=2$, and now

2°) $A=10*1^{1/2}$, $B=10*1^{1/2}$, $C=10*2$ and therefore, $D=A^n+B^n-C^n < 0$ (even if $n=3$).

3°) And now, with any increase of the numbers A and C by d , the number D will only decrease and with any decrease of the numbers B' and C' by e the number D can not become positive!

It remains to show that by increasing the numbers A and C by d and by reducing the numbers B' and C' by e we can get any one of the solutions A, B, C in a hypothetical Fermat's equality – for example, for the base $U=10$, starting with the solution $A'=5, B'=5, C'=0$, to arrive to $A'=7, B'=4, C'=1$.

The answer: $d=2$ and $e=3$ will lead to $A'=5+2, B'=5-1, C'=0+2-1$, with the final result:

$D=A^n+B^n-C^n < 0$,

which confirms the truth of FLT.

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