ORIGINAL PAPER

ELEMENTARY PROOFS FOR THE FERMAT'S LAST THEOREM IN *Z* USING ONE TRICK FOR A RESTRICTION IN Z_P

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Abstract. *An elementary and short proof of Fermat's Last Theorem (FLT) is pres[illegible]ted, which is understandable even to a student. Perhaps this proof is precisely [illegible] lost p[illegible], which could similar to own Fermat's proof. Restricting some coefficients [illegible] polyn[illegible]ials by value 0, except for the first term, allows to prove the Fermat's Last The[illegible]em for [illegible]main Z, since in this case the canonical representation of p-adic num[illegible]ers is lim[illegible] to [illegible]y one [illegible]git in the corresponding p-ary system. It was shown within the fr[illegible]k of [illegible]ntary alg[illegible]ra, which corresponds to the Pythagorean theorem (PT) that the [illegible]mption [illegible] existe[illegible]ce of certain "Fermat's triples" (FT), as integer solutions of Fermat's [illegible]t Theorem, [illegible] not be possible in Z due to some fatal inconsistencies for the PT [illegible] found [illegible] means the PT. Some equations in* $\mathbf{Z_p}$ *were shown for n=3, 4 and 5.*

Keywords: *Fermat's last theorem; Pythagor[illegible] theorem; p-adic integers; numbers; integers.*

1. INTRODUCTION

Theorem 1. Fermat's Last Theo[illegible]m ([illegible]LT) [illegible]as bee[illegible] proven in [1] and states: No three positive integers *a*, *b*, and *c* sa[illegible]fy the eq[illegible]ion $a^n + b^n = c^n$ for any integer value of n greater than 2.

Anyone can [illegible] be [illegible] for three numbers at the same time for n=3 for other numbers that are not P[illegible]gorean T[illegible]es, PTs. For example,

$$(\dots(0)\,2_{47})^3 [illegible] (\dots(0)\,3_{47})^3 = (\dots 13_{47})^3 = \dots(0)\,35_{47} \text{ for } \mathbf{Z_{47}}.$$

There is no pr[illegible]em wit[illegible] equations $a^n+b^n=c^n$ for $\mathbf{Z_p}$. For example, Pythagorean triples, PTs, i.e., the integer solutions in Z domain of the Pythagorean Theorem Equation, can give an inf[illegible]e n[illegible]ber of [illegible]eger solutions for Fermat's equation for n=4 in $\mathbf{Z_p}$ domain:

1) I[illegible] $\mathbf{Z_{61}}$ for P[illegible] 3, 4, 5 [illegible] , i.e., transformations of this PTs and forms of its squares, square roo[illegible] and negative values from Z into Z_{61} are shown below:

[illegible] $=\dots($[illegible]	$a = \sqrt{3} = \cdots 0\ 19\ 8;$	$a = \sqrt{(-3)} = \cdots 40\ 54\ 27;$
$\sqrt{16} = \dots(60)\ 57;$	$b = \sqrt{4} = \cdots (60)\ 59;$	$b = \sqrt{(-4)} = \cdots 27\ 38\ 39;$
$\sqrt{25} = \dots(60)\ 56;$	$c = \sqrt{5} = \cdots 35\ 8\ 26;$	$c = \sqrt{(-5)} = \cdots 6\ 48\ 19.$

[illegible] In $\mathbf{Z_{109}}$ for PTs 3, 4, 5, i.e., transformations of this PTs and forms of its squares, square r[illegible] and negative values from Z into $\mathbf{Z_{109}}$ are shown below:

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