SECOND SOLUTIONS OF SOME WHOLE NUMBER EQUATIONS

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The possibilities have been proved for the use of full-parallel solution method (FP method) for finding the second nontrivial solutions for some whole number equations.

The second nontrivial solutions have been defined for the equation $X2+Y2=Z2$ and equation $x2\text{-}Ay2=1$ in whole numbers.

For example, for the equation $X2+Y2=Z2$:

- there are solutions: $X1=m2\text{-}n2$, $Y1=2m\cdot n$, $Z1=m2\text{-}n2$ [1];
- other solutions: $X2=2n\text{-}m2\text{-}n2$, $Y2=22n\text{-}m\cdot n$, $Z2=2n\text{-}m2+n2$ [2].

Here: m and n are mutually heterogeneous prime * numbers, $m>n$.

The transformation of equations from multiple unknowns using FP method will define so many equations from one unknown as the number of unknowns contained in this equation; the highest degree of equation from one unknown is equal to the highest degree of monomials included into the equation from multiple unknowns.

Two solutions are defined for the equation $X+Y2=Z2$ in whole numbers.

Three solutions are defined for the equation $X+Y3=Z3$ in whole numbers.

The second solution examples are given for some of the solved equations in square whole numbers and higher from multiple unknowns.

* Two numbers one of which is even and another is odd are called heterogeneous.

References.

1. G.Rademacher and O. Teplits Numbers and figures. Experiments of mathematic thinking. M.: State publishing house of physical-mathematical literature, 1962. 264 pages.

2. Smolygin V.D. Two roots of equation type $X2+Y2=Z2$ (Two solutions of the equation type $X2+Y2=Z2$) // United scientific journal № 28. Moscow: Scientific publications' fund. 2005. pg. 68-76.