

# ABOUT LIPSHIT'S CONDITION FOR THE HARMONIC FUNCTION

*V. Safonov, A. Neshchadym, A. Zinkevych*

This paper considers functions harmonic in a Jordan domain of the complex plane.

The complex analysis based on the notion of holomorphic function. Such class of real functions as functions harmonic in a domain closely linked to the holomorphic (analytic) functions. Harmonic functions play a fundamental role in solving different problems of science and engineering, specifically, in elasticity theory, in aero- and hydromechanics, in thermal conduction theory. Thereby, an important problem is to study the functions harmonic in a domain.

Particularly important in many case were research related to prolongation of function satisfying a Lipshitz's condition. Harmonic and holomorphic functions satisfying a Lipshitz's condition present themselves as active means while researching differential properties of complex functions.

The paper is devoted to a problem of modern function theory linked to the prolongation of function harmonic in a domain and satisfying a Lipshitz's condition on its boundary. Maximum-modulus principle as a method of functions of a complex variable will be used in solving the problem.

Subharmonic function are a generalization of harmonic functions. In this paper the theorem on subharmonic function is important result. If a function harmonic in a domain of complex plane then logarithm of the function is subharmonic function in this domain. The result will be used in proving the main theorem.

In this paper the main result is following. Let a function be harmonic in a Jordan domain of complex plane and continuous in its closure. If this function satisfying a Lipshitz's condition on the boundary of the domain it do one in all closed domain. The theorems obtained here are addition to series of the results using to study holomorphicity conditions. The material of this paper can be used in solving different engineering problems too.