About solvability of some boundary value problems for Poisson equation in the ball

M.KOSHANOVA ¹, K.I.USMANOV ²,B.TURMETOV ³

^{1,2,3} Akhmet Yasawi University, 29 Sattarkhanov street, 161200 Turkestan, Kazakhstan

 $E\text{-}mail:\ maira_koshanova@mail,y_kairat@mail.ru} \\ ^{3}\ Institute\ of\ Mathematics\ and\ Mathematical\ Modeling,\ Kazakhstan} \\ E\text{-}mail:\ turmetovbh@mail.ru}$

Abstract: In the paper we study properties of some integral - differential operators of fractional order. As an application of the properties of these operators for Poisson equation we examine questions on solvability of a fractional analogue of Neumann problem and analogues of periodic boundary value problems for circular domains. The exact conditions for solvability of these problems are found

Keywords: fractional derivative, Hadamard operator, Poisson equation, Neumann problem, periodic problem

2010 Mathematics Subject Classification: 35J15, 35J25