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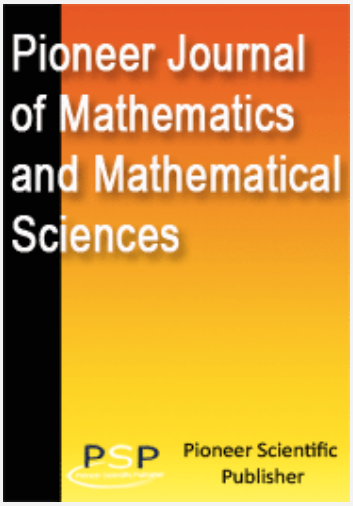

EXISTENCE AND UNIQUENESS OF THE SOLUTION OF SOME NONLINEAR PARTIAL DIFFERENTIAL EQUATION IN THE COMPLEX PLANE BY FIXED POINT THEOREM

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Abstract

In this paper, we discuss on the existence and uniqueness of the solution of the nonlinear partial differential equation

$$u_t - 6uu_x + u_{xxx} = 0 \qquad (1)$$

[1]with the initial condition $u(x, 0) = x^{-\alpha}$, $0 < \alpha < 1$ in the complex plane, by writing the equation (1) in the form

$$f_t - f_{yyy} = \sum_{j=0}^{3} b_j(y, t; f) f^{(j)} + r(y, t). \qquad (2)$$

Keywords and phrases: Bernstein polynomial approach, Lane-Emden type equations, quasilinearization technique, collocation method.

[1]Korteweg-de Vries equation (Kdv)