Letter to the editor


In page 149 step 4, the Authors indicate that substituting (2.4) along with Eq (2.5) into Eq (2.3) and collecting all the coefficients of \( z^i(\xi) \) \((i = 0, 1, 2, \ldots)\). then setting these coefficients to zero, yield a set of algebraic equations, which can be solved by using the maple or mathematica ... Even though the Authors obtain a polynomial of \( z \) in their equation, the following example shows that the \( z \) terms appear when the given equation includes first order derivatives.

Example. Suppose we consider the Newell-whitehead equation which reads

\[ u_t = u_{xx} + au - bu^3. \]

If we look for traveling form \( u(x, t) = u(\xi) \) and \( \xi = x - ct \) where \( c \) is the velocity of propagation, by using \( \xi \) we obtain the following nonlinear ordinary differential equation.

\[ u'' + cu' + au - bu^3 = 0 \]  (1)

Homogeneous balance between \( u'' \) and \( u^3 \) gives \( N = 1 \). Therefore

The Authors seek solutions as the following

\[ u(\xi) = g_0 + g_1 \left( \frac{z(\xi)}{1 + z^2(\xi)} \right) + f_1 \left( \frac{1 - z^2(\xi)}{1 + z^2(\xi)} \right) \]

where \( g_0, g_1 \) and \( f_1 \) are constants to be determined such that \( g_1 \neq 0 \) or \( f_1 \neq 0 \)

\[ u' = g_1 \left( \frac{z'(1 - z^2)}{(1 + z^2)^2} \right) - f_1 \left( \frac{4z'z}{(1 + z^2)^2} \right) \]

(2)

If we substitute \( u', u'', u \) and \( u^3 \) into Eq(1), then we get the polynomial of \( z'z^j \) such that \( i = 0, 1; j = 0, 1, 2, \ldots \) Therefore Step 4 needs to be changed as above.

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