Nine solutions to the Dym equation

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Abstract

In this paper, I describe nine solutions to the Dym equation.
The paper ends with "The End"

Introduction

The Dym equation is

$$\frac{\partial u(x,t)}{\partial t} = u(x,t)^3 \frac{\partial^3 u(x,t)}{\partial x^3}$$

Nine solutions to the Dym equation

Nine solutions to the Dym equation are:

$$u(x,t) = \left[-a\alpha\left(x + \alpha^2 bt\right)\right]^{\frac{p}{q}}$$

where

1. $$a = -678, b = 204304, p = -312, q = -468$$
2. $$a = -633, b = 178084, p = 1486, q = 2229$$
3. $$a = -9, b = 36, p = 2, q = 3$$
4. $$a = -9, b = 36, p = 250, q = 375$$
5. $$a = -6, b = 16, p = 1372, q = 2058$$
6. $$a = 6, b = 16, p = 634, q = 951$$
7. $$a = 9, b = 36, p = 1634, q = 2451$$
8. $$a = 309, b = 42436, p = 1082, q = 1623$$
9. $$a = 801, b = 285156, p = -1652, q = -2478$$

The End