Ghosh's partial differential equation and a solution

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Abstract

In this paper, I describe my partial differential equation and a solution.
The paper ends with "The End"

Ghosh's partial differential equation

My partial differential equations is

$$\frac{\partial y(x)}{\partial x} = \alpha \frac{a + by(x)}{c + dy(x)}$$

where a, b, c, d, α are constants.

A solution to my partial differential equation

A solution to my partial differential equation is

$$y(x) = \frac{(bc - ad)W\left(-\frac{d\left(e^{\frac{ad+b^2(\alpha x+\beta)}{bc}}\right)^{\frac{bc}{bc-ad}}}{ad-bc}\right) - ad}{bd}$$

where $W(z)$ is the ProductLog function and β is a constant of integration.

The End