## NONLINEAR FRACTIONAL DIFFERENTIAL EQUATIONS

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We present some basic aspects of fractional calculus and fractional differential equations.

Some simple nonlinear fractional equations are considered. Some of them are easily solved, but others present some new difficulties and problems. As a model we focus on the nonlinear logistic equation.

References:

• S. Abbas, M. Benchohra, J.E. Lazreg, J.J. Nieto, Y. Zhou, Fractional Differential Equations and Inclusions: Classical and Advanced Topics. Series on Analysis, Applications and Computation, World Scientific, 2023. ISBN: 978-981-126-125-1

• I. Area, J.J. Nieto, Power series solution of the fractional logistic equation. Physica A: Statistical Mechanics and its Applications 573 (2021), 125947.J.J. Nieto Solution of a fractional logistic ordinary differential equation. Applied Mathematics Letters 123 (2022), 107568.

• J.J. Nieto, Fractional Euler numbers and generalized proportional fractional logistic differential equation. Fractional Calculus and Applied Analysis 25 (2022), pp. 876-886.

• J.L. Wei, G.C. Wu, B.Q. Liu, J.J. Nieto, An optimal neural network design for fractional deep learning of logistic growth. Neural Computing and Applications, In Press, 2023. https://doi.org/10.1007/s00521-023-08268-8

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