

Technique of Lazarus Fuchs for Solving Rational First-Order Differential Equations

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I discovered in 1993 that there are numerous first-order differential for which the `DSolve` command of *Mathematica* is not helpful even though the equations can be transformed to a more amenable form by a transformation that Lazarus Fuchs described in 1884. For a modern presentation showing how to use the transformation of Lazarus Fuchs with numerous examples, see my paper titled *Lazarus Fuchs' Transformation for Solving Rational First-Order Differential Equations*, *Mathematical Analysis and Applications*, Volume 187 (1994), pages 961-985, of which a copy may be obtained by clicking [here](#). In particular, page 983 of this paper lists 132 first-order algebraic differential equations for which the transformation of Lazarus Fuchs is quite useful even though the **DSolve** command of *Mathematica* provides no help at all.