Three Methods for Exact Integration of ODEs Compared

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The talk gives an overview of three computer algebra methods for finding exact closed form solutions of ordinary differential equations. Two general methods covered are those based on symmetry analysis and equivalence problem approach. A short analysis of Prelle-Singer procedure for the first-order ODEs is also done. Conceptual and practical comparisons of the methods are performed whenever possible. In particular, for the class of equations solved by symmetry analysis and class of equations solvable by Prelle-Singer procedure, the intersection and difference of these classes is outlined based both on theoretical observations and on test results.