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COMPLEXITY OF PUISEUX SOLUTIONS OF DIFFERENTIAL AND q-DIFFERENCE EQUATIONS OF ORDER AND DEGREE ONE

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Abstract: We relate the complexity of both differential and q-difference equations of order one and degree one and their solutions. Our point of view is to show that if the solutions are complicated, the initial equation is complicated too. In this spirit, we bound from below an invariant of the differential or q-difference equation, the height of its Newton polygon, in terms of the characteristic factors of a solution. The differential and the q-difference cases are treated in a unified way.

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