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Analytical approximations of solutions of SDEs by applying Taylor series

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It is widely known that most SDEs cannot be solved explicitly. Analytical approximations of solutions of various types of SDEs based on Taylor series are presented. The L^p and almost sure convergence of the sequence of approximate solutions towards the solution of the initial equation are shown, as well as a few EU theorems, under some less common assumptions, such as the polynomial conditions. Carefully constructed examples which verify the theoretical results are presented.