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Abstract: In this paper we introduce, the so called 'Open Formula', two points formula, three points formula, four points formula, five points formula and six points formula of the Runge-Kutta method to solve the initial value problem of the ordinary differential equation. These formulas use the points and weights from the Gauss-Legendre Quadrature formulas for finding the value of the definite integral. We will use these formulas to compute the numerical solution of the initial value problem of the ordinary differential equations from the models that are modified from The Newton Cooling Law. (Received December 01, 2005)