

## MA311 (Scientific computing)-IITG

11-10-18

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1. Consider the IVP  $y' = te^{3t} - 2y$ ,  $0 \leq t \leq 2$ ,  $y(0) = 0$ . The exact solution to this IVP is obtained as  $y(t) = \frac{1}{5}te^{3t} - \frac{1}{25}e^{3t} + \frac{1}{25}e^{-2t}$ . Using Runge-Kutta method of order 2 and 4 (RK2 and RK4) compute and list the absolute error at  $t = 2.0$  for different values of  $h$  ( must take 7 steps, starting from  $h = 0.2$ ). Also compute the corresponding rate of convergence and include in the same table.