

16.901: Homework # 6
Due Date: February 23, 2pm

Implement the fourth-order Runge-Kutta algorithm to solve the problem

$$u_t = -u^2 \quad \text{with} \quad u(0) = 1.$$

Applying this method for timesteps of $\Delta t = 0.01, 0.02,$ and $0.04,$ plot the error from $t = 0$ to $10.$ Based on these results, show that the actual error is converging at fourth-order with respect to $\Delta t.$