

Group members (2 to 4): \_\_\_\_\_

(1) Compute the value of  $y(1)$  if  $y' = 2xy^2$  and  $y(0) = 2$ .

(2) Approximate  $y(1)$  from the previous problem using Euler's method with 2 steps. Compare that approximation to that given by the improved Euler method with 1 steps, and the Runge-Kutta method using 1 step. Which is the best approximation?

(3) Solve the initial value problem  $\frac{dy}{dx} = 3\frac{y}{x} - 3x^5$ ,  $y(2) = 56$ .