

Math 226 / CS 255, Spring 2007
Computing Assignment 2

1. Write a program to solve the initial-value problem $y' = ty$, $y(0) = 1$, on the interval $[0, 1]$ using the Taylor series method of order 20, that is, include terms in the Taylor series up to and including h^{20} . Observe that a simple recursive formula can be used to obtain $y^{(n)}$ for $n \in \llbracket 1, 20 \rrbracket$.
2. Solve the initial-value problem $y' = 1 + y^2$, $y(0) = 0$, on the interval $[0, 1.56]$ using the Taylor series method of order 4 with $h = 0.01$. Then use the computed value of $y(1.56)$ as initial value to integrate back to $t = 0$. Compare the results and explain what happened.