

Assignment 8

Math 528L Fall 2021

Due 10/24 (Sunday at 11:59 pm)

1 Nonlinear Backward Euler

- (a) First, try using DSolve in Mathematica to find $y(t)$ for $y' = -5y \cos(y)$ with $y(0) = 0.1$. What happens?
- (b) Implement Forward Euler for the ODE: above. Use a step size $h = 0.001$ and a final time $T = 6$. Plot the solution.
- (c) Use a refinement study to compute the order (use $h = 0.001$). Rounding to the nearest integer, what is the order?
- (d) Lastly, try using NDSolve in Mathematica to find $y(t)$. Plot the solution.