Euler's Method Homework
MATH 256

Problems from Boyce and DiPrima, 7th Edition

Approximate the solution to each IVP at 0.1, 0.2, 0.3, and 0.4 using step sizes 0.1, 0.05, and 0.025. Then solve the IVP and compare the actual values to your estimates.

1. $y' = 3 + t - y$, $y(0) = 1$.

3. $0.5 - t + 2y$, $y(0) = 1$.

4. $y' = 3\cos(t) - 2y, y(0) = 0$.

   For the last two problems, plot a direction field to determine whether the solutions are converging or diverging. Then use the initial condition to approximate the values at $t = 0.5, 1, 1.5, 2, 2.5$, and 3 using $h = 0.1, 0.05, 0.025$, and 0.01. (You will want to use Maple or some equivalent technology.)

5/11. $y' = 5 - 3\sqrt{y}$. $y(0) = 2$.

7/13. $y' = \dfrac{4 - ty}{1 + y^2}$. $y(0) = -2$.