Introduction to Scientific Computing
Quiz 3

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17th November 2014

Question 3.1

You are given the following differential equation

$$f'(x) = f(x)$$

and the initial condition $y(0) = 1$.

(a) Using the Euler Method and a timestep of $h = 1$, integrate the equation up to $x = 10$.

(b) Use the analytic solution to calculate the error at $x = 10$.

(c) Repeat the first few steps with the mid-point method. Are the results better or worse?

Question 3.2

We covered a wide range of topics in this course. Which ones would you like to go over again in the last lecture?

- linux, remote logins, git
- working with the command line and the texteditor vi
- how computers work, assembler
- binary system
- number representations, floating point numbers
- compensated summation
- python syntax, loops
- python syntax, working with files
- matrix decomposition
- least square fit
- plotting
- interpolation and extrapolation, general
- spline interpolation
- Lagrange interpolation
- root finding algorithms
- differential equations, general
- differential equarions, numerical methods