1. Problems to be presented on 11-8

If you are interested in doing a problem, but would like some help, email me for hints.

- First problem for presentation: Find a differential equation where Euler's approximation fluctuates above and below a stable solution, but does not converge to it.
- Second Problem for Presentation: Find a differential equation where Euler's method finds a constant solution, although in reality the solution is non-constant.

- Third problem for presentation: Explain why every first order differential equation (that is, a differential equation in which only $f(t)$ and $f'(t)$ appear) has either $\lim_{t\to\infty} f(t)$ converge to a number or diverge to infinity. Find a second order differential equation (a differential equation where only $f(t), f'(t)$ and $f''(t)$ appear) that does not $\lim_{t\to\infty} f(t)$ converge or diverge to infinty.