

Homework 1 Due 9/15/2015

1. (5 points) 1.3.1 (c) (d). After you compute the numerical solutions, calculate $\|u^N - U^N\|_2$, where u^N and U^N are vectors containing values of the exact solution and the numerical solution, respectively, on grid points at time t_N .
2. (5 points) Again in problem 1.3.1, we know that the forward-time forward-space scheme is a downwind scheme for this equation, and will not give correct numerical solutions no matter how small h is. How about the implicit backward-time forward-space scheme? Test it with $\lambda = 0.8$ and report your results.
3. (5 points) 1.4.3
4. (5 points) 2.1.5