MAE 6220
Homework 3
Due 10/27/17 at 6pm via email

1. Examine the consistency of the following parabolic equation, using a central differencing scheme for discretization in space and a first order forward differencing scheme for discretization in time.

$$\frac{\partial u}{\partial t} - \frac{\partial^2 u}{\partial x^2} = 0 \qquad \text{(Eq. 1)}$$

2. Examine the stability of Eq.1 for the grid shown in Fig.1 using a central differencing scheme for discretization in space. The boundary conditions are $u(t,0) = a$ and $u(t,L) = b$.

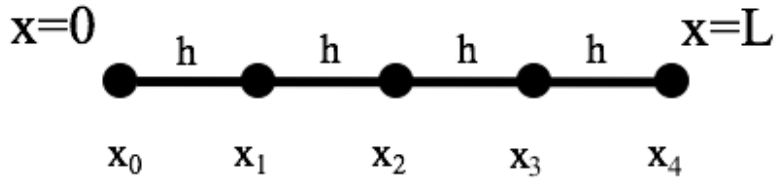

Fig. 1