**LECTURE ASSIGNMENT 2**

The continuum model for the string shown is given by equations

  or 

 ,  , and  .

Write the equations according to the Finite Difference Method using a regular grid , if the backward and forward difference approximations to the first derivative and the central difference approximation to the second derivative are given by

, , and .



*L*





*g*

0

3

2

1

*P*

Name**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** Student number**\_\_\_\_\_\_\_\_\_\_\_\_\_**

Finite Difference Method uses the continuum model and difference approximations to derivatives at the grid points to discretize with respect to the spatial coordinate. Proper outcome requires a correct representation of the continuum model (obviously). Let us write the equations by considering the points one by one:

At point , one uses the boundary condition

 :  . 🡸

At the regular point , one uses the differential equation

 :  . 🡸

At the non-regular point  of the point force, one uses the jump condition

 : . 🡸

At point , one uses the boundary condition

 : . 🡸