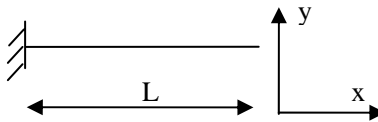## Computer Assignment #2
Due in class on Monday, 11/20/2006

When you use ABAQUS CAE to solve a natural frequency problem, the way to do this kind of

analysis is: When you create a step: Select procedure type Linear perturbation→Select

Frequency. All other things are similar to what you have done for static problems.

Use ABAQUS CAE to get the natural frequency for a rod under **axial** loading.   Show that the

analytical solution is given by $f_1 = \dfrac{1}{4L}\sqrt{\dfrac{E}{\rho}}$.   Use 1 element, 2 elements… till 10 elements to

get the first natural frequency.   You can model this rod as a beam.   Hint: to avoid getting the

bending mode, displacement in the y direction along the beam should be fixed so that the beam

can only deform in the x direction.   Plot your dimensionless frequency $\dfrac{f_1 L\sqrt{\rho}}{\sqrt{E}}$ as a function

of the element number.