

Name _____ Student number _____

Home assignment 2

What is relative (numerical) error in the smallest frequency of the free vibrations f_{\min} of the string shown if predicted by the Finite Difference Method and a regular spatial grid $i \in \{0, 1, 2, 3\}$? Cross-sectional area A , density of the material ρ , and horizontal tightening S are constants. Use the three-point central difference approximation to the second derivative with respect to x . The smallest frequency given by the continuum model $f_{\min} = \sqrt{S / (\rho A)} / (2L)$.

