

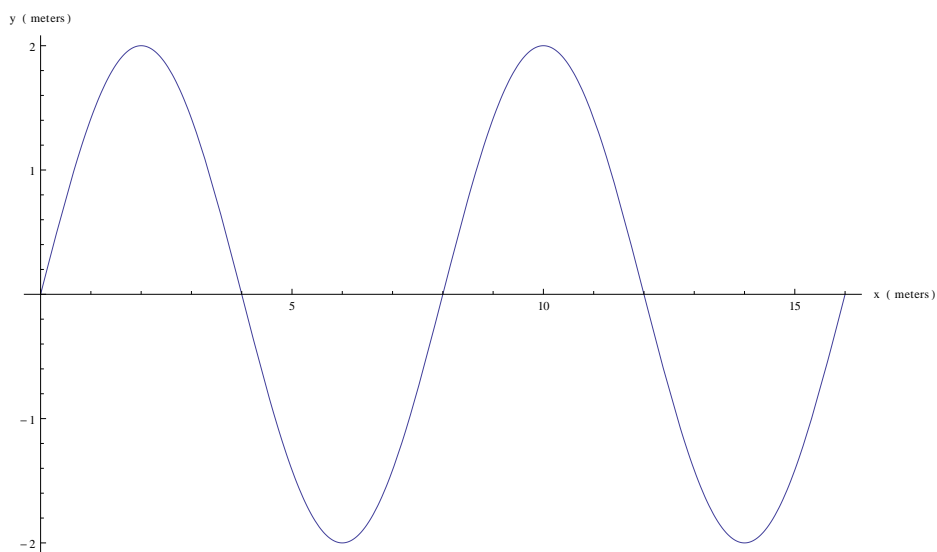
Prelab 4: Transverse Standing Waves

PHYS 1320

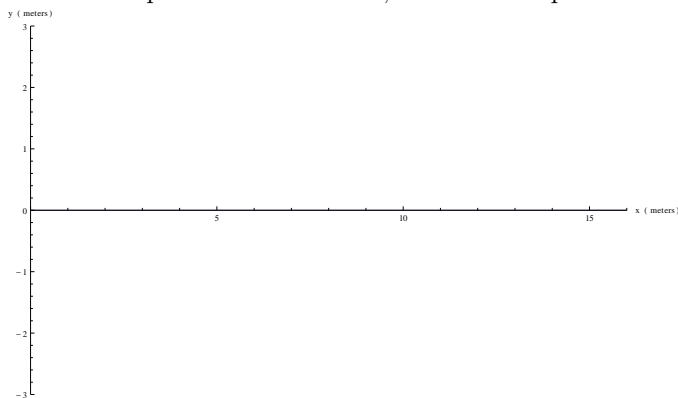
Fall 2013

Due at the beginning of class.

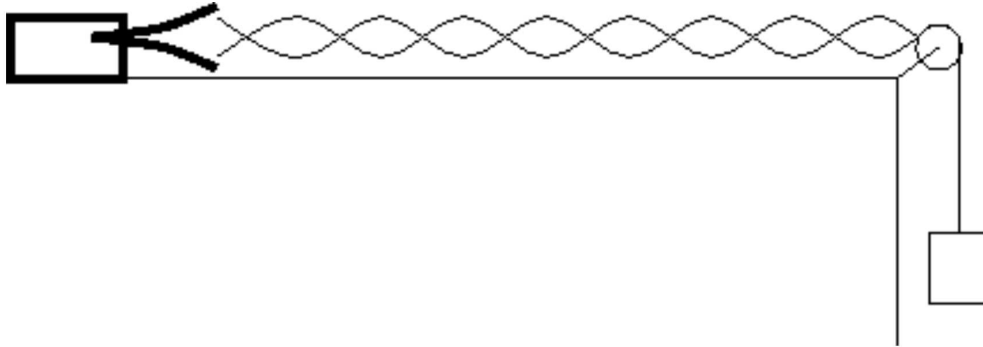
1) The diagram below shows a snapshot of a vibrating string taken at time $t=0$ seconds.



- What is the wavelength?
- What is the Amplitude?
- If T is the period of oscillation, sketch a snapshot of the wave one half period later, at $t = T/2$.



The next experiment consists of a tuning fork mounted to the lab bench, which vibrates a horizontal string that can be draped over a pulley and loaded with mass.



The equation describing standing waves in a string under tension is,

$$f = \frac{1}{\lambda} \sqrt{\frac{T}{\mu}}$$

where f is the linear frequency of oscillation, λ is the wavelength of the vibrations, T is the tension in the string, and μ is the linear mass density of the string. Explain in detail how you would determine (using tools in the lab, and without using the formula):

- the wavelength of the vibrations
- the tension in the string
- the linear mass density of the string