

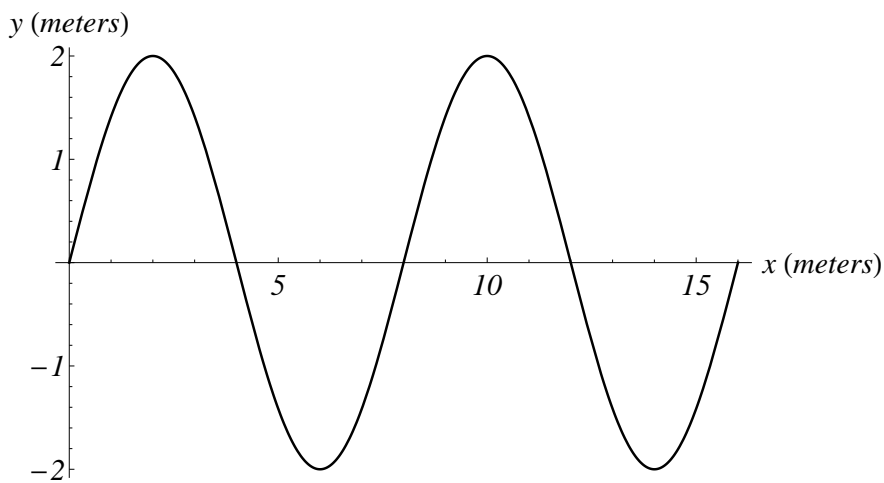
## Prelab 4: Transverse Standing Waves

PHYS 1320

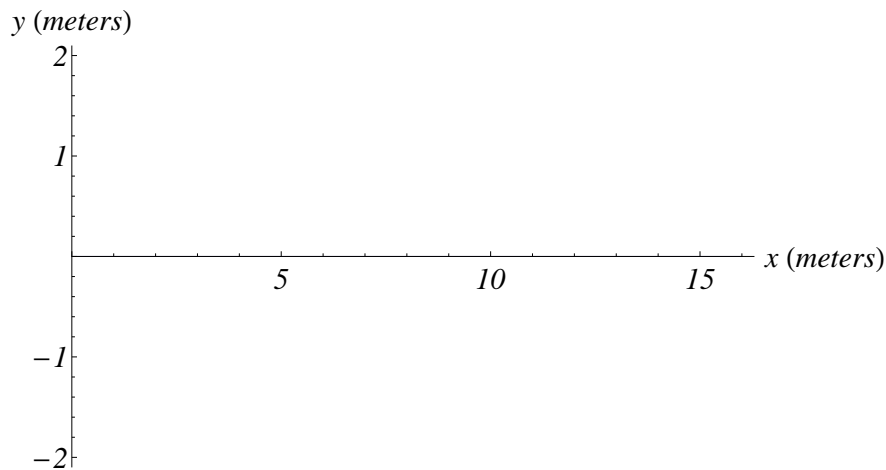
Fall 2014

*Due at the beginning of class.*

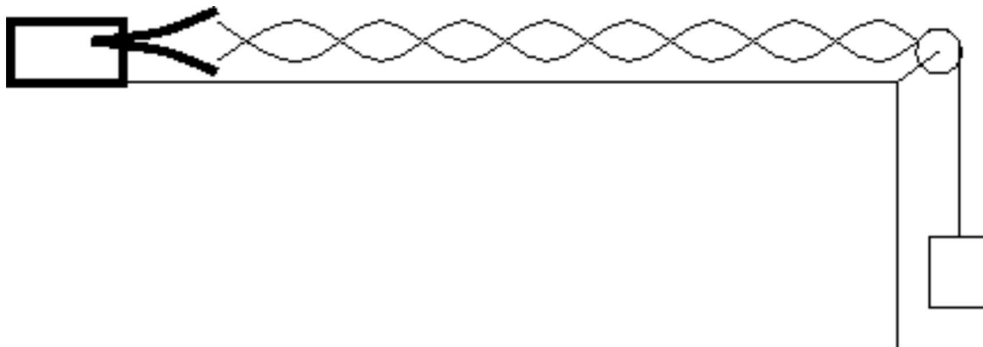
1) The diagram below shows a snapshot of a vibrating string taken at time  $t = 0$  seconds.



- 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,  $\lambda$  is the wavelength of the vibrations,  $T$  is the tension in the string, and  $\mu$  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