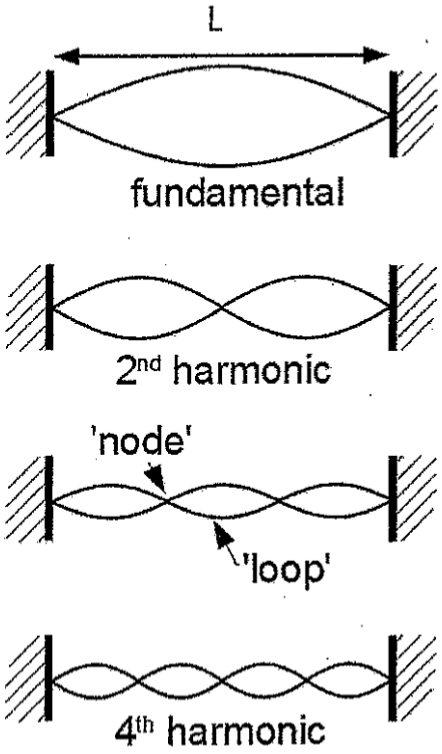
Resonances of a String

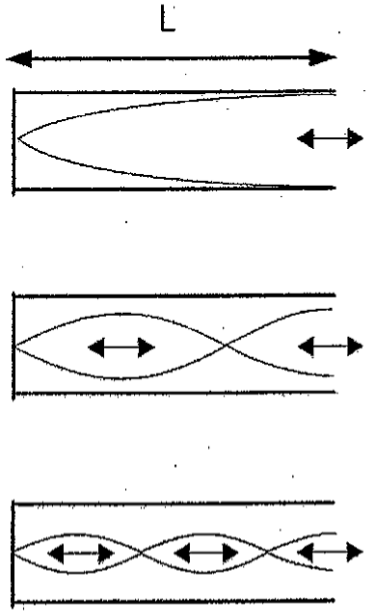
1. The first four harmonics of a guitar string are shown below. The length of the string is L = 63 cm and the fundamental frequency is 83 Hz.




a. What is the wave velocity on the string?

b. What are the λ's and the frequencies of the 2nd, 3rd, and 4th harmonics?

2. The first three harmonics of air motion in a test tube are shown below. The length of the tube is 20 cm. The speed of sound in air is 330 m/s.




a. What are the wavelengths for the first three harmonics?

b. What are the frequencies for the first three harmonics?