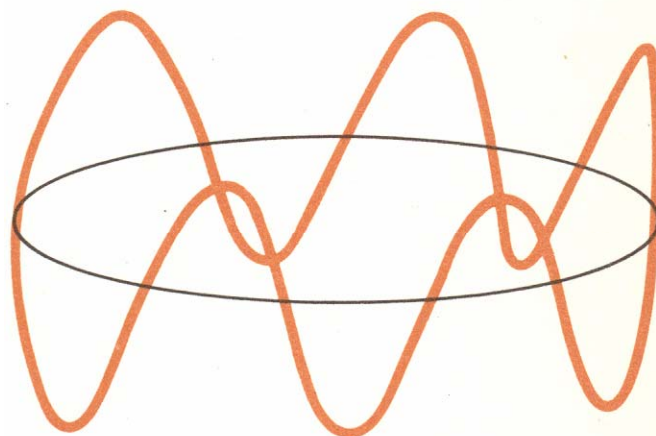


(a)



(b)

FIGURE 12-8 Standing waves. (a) First overtone (excited state) of a guitar string. Note the node in the middle. (b) Circular standing wave on a closed loop (the fifth overtone, with ten nodes).

Circumference:

$$L = 2\pi r = n'\lambda$$

where

n' = (# of wavelengths)
is a positive integer
(just like Bohr's
quantum number!)