Quiz #1 Ch16

Name: ID#: Sec#:

Q1 A stretched string has a length of 2.0 m and a tension of 1.0 N. A sinusoidal transverse wave traveling on the string is described by the equation:

y (x,t) = 0.010 sin (3.0x – 75t), where x and y are in meters and t is in seconds. What is the mass of the string?

Solution:

$$since v=\sqrt{\frac{τ}{μ}}=\sqrt{\frac{τ}{^{m}/\_{L}}}=\sqrt{\frac{τL}{m}}=\frac{w}{k} ⟹ m=τL\left(\frac{k}{w}\right)^{2}$$

$$m=1×2×(\frac{3}{75})^{2} kg$$

$$m=3.2×10^{-3}kg$$