Quiz #1 Ch16

Name: ID#: Sec#:

Q1 A stretched string has a length of 2.0 m and a mass of 2.5 g. 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 tension in the string?

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

$$ τ =\frac{2.5×10^{-3}}{2}×(\frac{75}{3})^{2}=0.78 N$$