Answer on Question #61414-Physics-Other

A soft rope that weight 2.0 pounds is stretched by the force of 150 lbf a wave is started down the rope by plucking it. What is the speed of the wave in m/s

Solution

We need to know the length of the rope to find the linear density of the rope. So, let it be 1 m.

$$v = \sqrt{\frac{F}{\mu}} = \sqrt{\frac{Fl}{m}} = \sqrt{\frac{150 \cdot 4.448222 N(1 m)}{2.0 \cdot 0.453592 kg}} = 27 \frac{m}{s}.$$

Answer: $27\frac{m}{s}$.

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