

Answer on Question #73132-Physics-Other

A 100cm long rod is clamped at its center and stroked. At what other points might be clamped in order to amid the same tone, (a) in the 1st overtone (b) in the 2nd overtone?

Solution

(a)

$$\lambda = 2 \frac{L}{2} = L = 100 \text{ cm.}$$

$$x = \frac{100}{6} = 16.7 \text{ cm.}$$

(b)

$$\lambda = 2 \frac{L}{3} = \frac{200}{3} \text{ cm.}$$

$$x = \frac{\frac{200}{3}}{\frac{20}{3}} = 10 \text{ cm.}$$

Answer: a) 16.7 cm; b) 10 cm.

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