

Answer on Question #81624 - Physics - Mechanics – Relativity

Pendulum I need to find t. $T=2\pi\sqrt{L/g}$ but I don't have L. Please help.

Solution

The period of the pendulum's motion is

$$T = \frac{1}{\nu} = 2\pi \sqrt{\frac{L}{g}}$$

In other words,

$$L = \frac{T^2 g}{4\pi^2} = \frac{g}{4\nu^2 \pi^2}$$

If there is no L given, perhaps you work with a compound pendulum. In this case, L is

$$L = \frac{I}{mR}$$

where I – moment of inertia for given body, m – its mass, R – distance between the centre of mass and the pivot point. Thus,

$$T = 2\pi \sqrt{\frac{I}{mgR}}$$

Answer

$$T = 2\pi \sqrt{\frac{I}{mgR}}$$

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