

Question

A ball of mass 50 g tied to the end of a 50 cm inextensible string is whirled around in a vertical circle. Find the tension in the string when the ball is at the top of the circle. Take $g=10\text{m/s}^2$.

Solution

$$m = 50\text{g} = 0.05 \text{ kg}; \quad l = 50 \text{ cm} = 0.5 \text{ m}; \quad g=10\text{m/s}^2. \quad T - ?$$

Second Newton's law:

$$0 = mg - T;$$

$$T = mg = 0.05 * 10 = 0.5 \text{ N}.$$

Answer

$$\mathbf{T = 0.5 \text{ N}.$$

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