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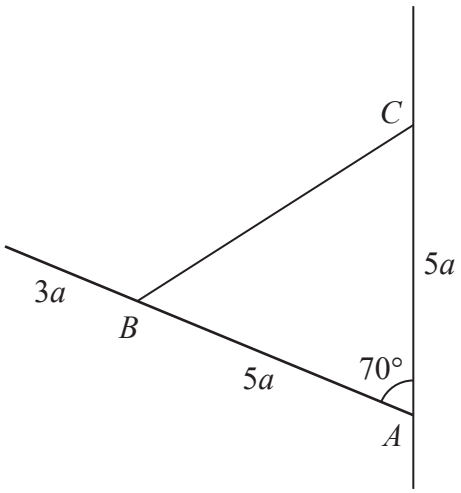


Figure 3

A uniform rod, of length $8a$ and mass M, has one end freely hinged to a fixed point A on a vertical wall. One end of a light inextensible string is attached to the rod at the point B, where $AB = 5a$. The other end of the string is attached to the wall at the point C, where $AC = 5a$ and C is vertically above A. The rod rests in equilibrium in a vertical plane perpendicular to the wall with angle $BAC = 70°$, as shown in Figure 3.

(a) Find, in terms of M and g, the tension in the string.

(3)

The magnitude of the force acting on the rod at A is λMg, where λ is a constant.

(b) Find, to 2 significant figures, the value of λ.

(6)

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