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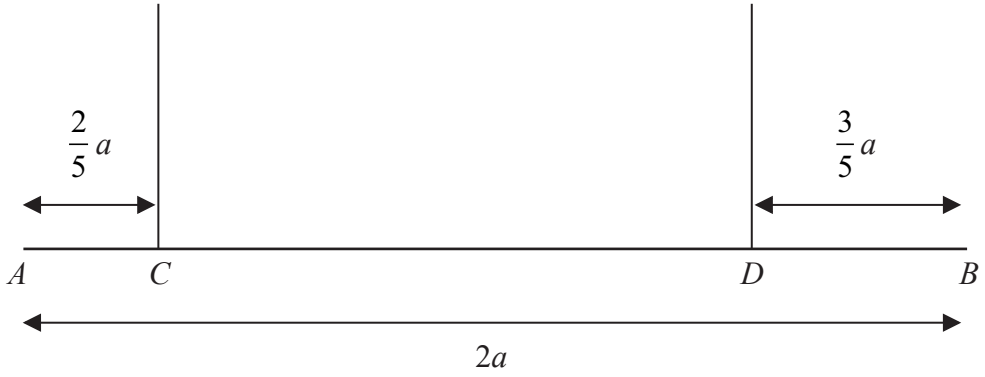


Figure 1

A uniform rod AB has length $2a$ and mass M. The rod is held in equilibrium in a horizontal position by two vertical light strings which are attached to the rod at C and D, where $AC = \frac{2}{5}a$ and $DB = \frac{3}{5}a$, as shown in Figure 1.

A particle P is placed on the rod at B.

The rod remains horizontal and in equilibrium.

(a) Find, in terms of M, the largest possible mass of the particle P

(3)

Given that the mass of P is $\frac{1}{2}M$

(b) find, in terms of M and g, the tension in the string that is attached to the rod at C.

(3)

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