

6.

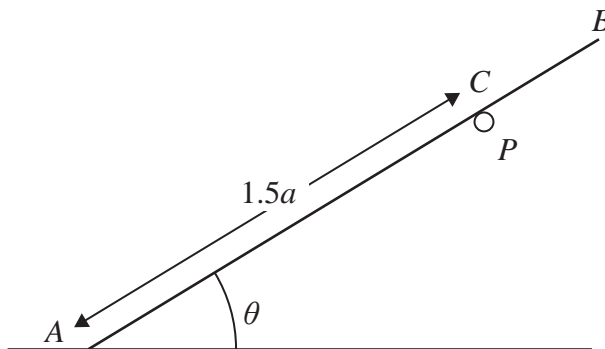


Figure 5

Figure 5 shows a uniform rod AB of mass M and length $2a$.

- the rod has its end A on rough horizontal ground
- the rod rests in equilibrium against a small smooth fixed horizontal peg P
- the point C on the rod, where $AC = 1.5a$, is the point of contact between the rod and the peg
- the rod is at an angle θ to the ground, where $\tan \theta = \frac{4}{3}$

The rod lies in a vertical plane perpendicular to the peg.

The magnitude of the normal reaction of the peg on the rod at C is S .

(a) Show that $S = \frac{2}{5}Mg$

(3)

The coefficient of friction between the rod and the ground is μ .

Given that the rod is in limiting equilibrium,

(b) find the value of μ .

(6)