

4.

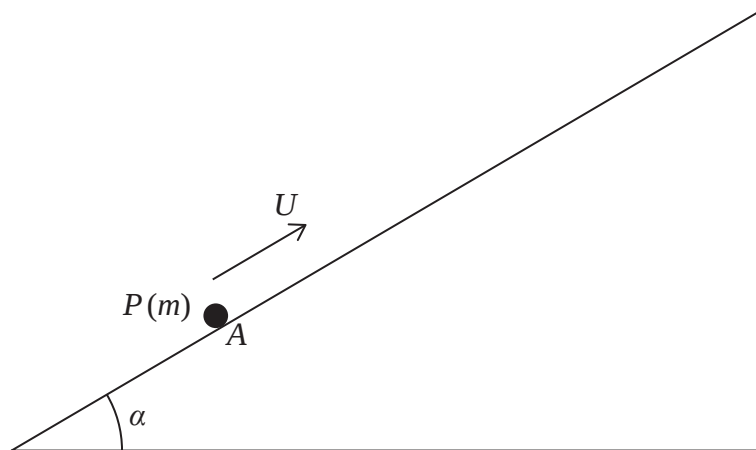


Figure 2

A particle P of mass m is held at rest at a point A on a rough inclined plane.

The plane is inclined to the horizontal at an angle α , where $\tan \alpha = \frac{3}{4}$

The particle P is projected with speed U up a line of greatest slope of the plane, as shown in Figure 2.

The coefficient of friction between P and the plane is $\frac{4}{5}$

Air resistance is negligible.

(a) Show that, as P moves up the plane, the deceleration of P is $\frac{31}{25}g$

(6)

The particle comes to rest at the point B on the plane.

Given that $U = \sqrt{2gd}$

(b) find AB in terms of d .

(2)

Given that P remains at rest at B ,

(c) find, in terms of m and g , the magnitude of the frictional force acting on P at B .

(2)