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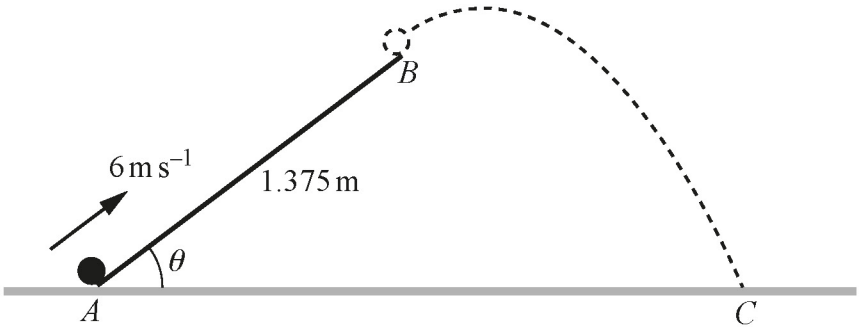

The points A and B are the lower and upper ends, respectively, of a line of greatest slope on a plane inclined at an angle θ to the horizontal, where $\sin\theta = 0.6$ and $AB = 1.375\,\text{m}$ (see diagram).

A particle P is projected up the plane with speed $6\,\text{m s}^{-1}$ from A towards B.

The plane at A is fixed to the ground which is horizontal.

The surface of the plane is rough and the coefficient of friction between P and the plane is 0.25.

(a) Show that the speed of P at B is $3.8\,\text{m s}^{-1}$. **[6]**

The particle leaves the slope at B and moves freely under gravity.

The particle first lands at a point C on the horizontal ground. The time taken for P to travel from A to C is T seconds.

(b) Determine the value of T. **[6]**