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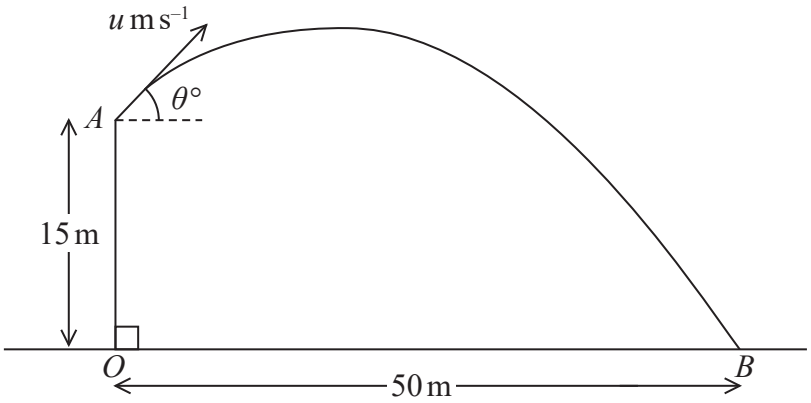


Figure 4

A small ball is thrown from the point A with speed $u\,\text{m s}^{-1}$ at an angle $\theta°$ above the horizontal. The point A is vertically above the point O, which is on horizontal ground, such that AO is 15 m.

The ball takes 3 seconds to travel from A to B, where B is on the ground and $OB = 50$ m, as shown in Figure 4. By modelling the motion of the ball as that of a particle moving freely under gravity,

find

(a) (i) the value of θ,

(ii) the value of u,

(6)

(b) the speed of the ball as it hits the ground at B,

(3)

(c) the direction of motion of the ball as it hits the ground at B.

(2)

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