**7.** [*In this question, the unit vectors* **i** *and* **j** *are in a vertical plane*, **i** *being horizontal and* **j** *being vertically upwards*.]

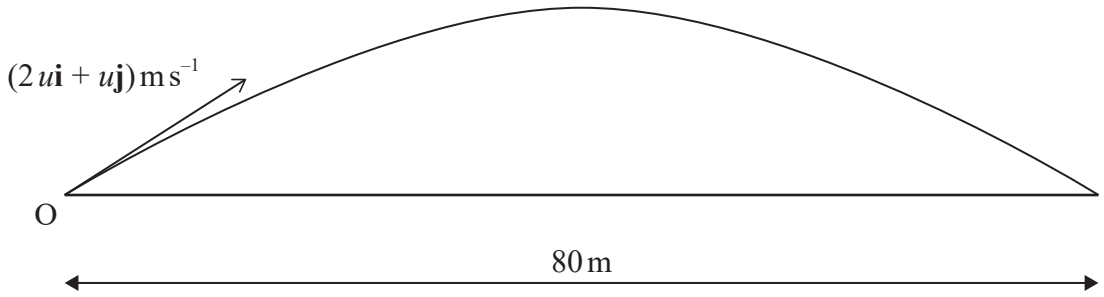



**Figure 3**

A golf ball is hit from a point $O$ on horizontal ground and is modelled as a particle moving freely under gravity. The initial velocity of the ball is $(2u\mathbf{i} + u\mathbf{j})\,\mathrm{m\,s^{-1}}$
The ball first hits the horizontal ground at a point which is 80 m from $O$, as shown in Figure 3.

Use the model to

(a) show that $u = 14$

**(6)**

(b) find the total time, while the ball is in the air, for which the speed of the ball is greater than $7\sqrt{17}\ \mathrm{m\,s^{-1}}$

**(5)**

DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

**Question 7 continued**

**Question 7 continued**

**(Total for Question 7 is 11 marks)**

**TOTAL FOR PAPER IS 75 MARKS**

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA