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**Q6**

**(Total 13 marks)**



7.

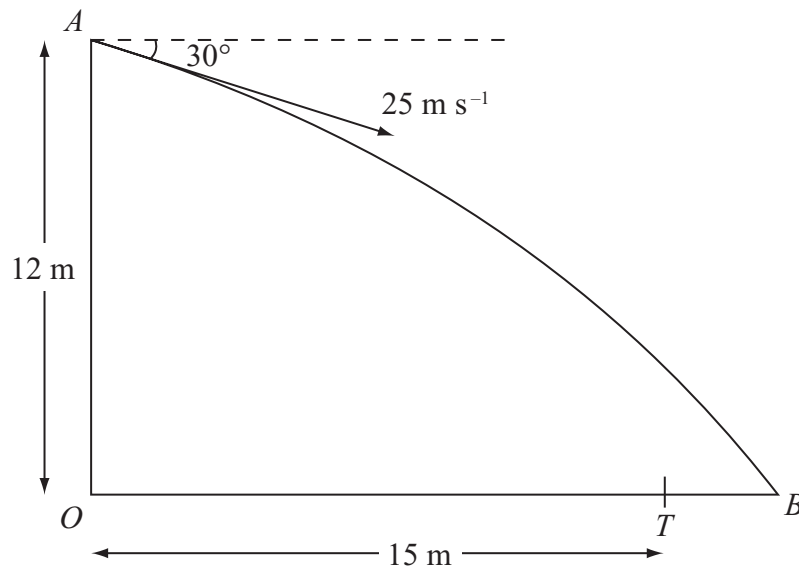


Figure 4

A ball is thrown from a point  $A$  at a target, which is on horizontal ground. The point  $A$  is 12 m above the point  $O$  on the ground. The ball is thrown from  $A$  with speed  $25 \text{ m s}^{-1}$  at an angle of  $30^\circ$  below the horizontal. The ball is modelled as a particle and the target as a point  $T$ . The distance  $OT$  is 15 m. The ball misses the target and hits the ground at the point  $B$ , where  $OTB$  is a straight line, as shown in Figure 4. Find

(a) the time taken by the ball to travel from  $A$  to  $B$ , (5)

(b) the distance  $TB$ . (4)

The point  $X$  is on the path of the ball vertically above  $T$ .

(c) Find the speed of the ball at  $X$ . (5)

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**Question 7 continued**

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