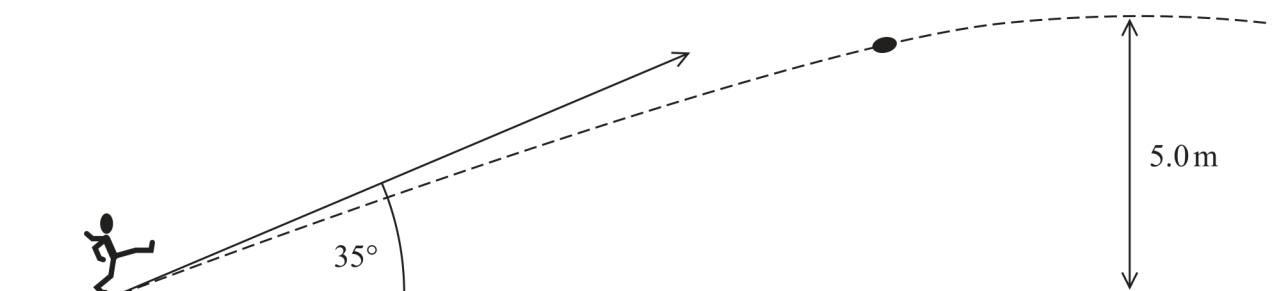


- 13 A rugby player kicks a ball off the ground at an angle of  $35.0^\circ$  to the horizontal as shown. The ball reaches a maximum height of  $5.0\text{ m}$  before returning to the ground.



- (a) Show that the initial speed of the ball is about  $17\text{ m s}^{-1}$ .

(3)

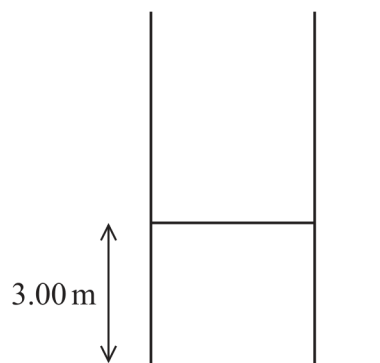
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(b) After travelling a horizontal distance of 22.0 m the ball reaches the goal.



To score, the ball must be more than 3.00 m above the ground when it reaches the goal.

Deduce whether an initial speed of  $17.0 \text{ m s}^{-1}$  is sufficient to score.

(5)