

A particle P is projected from a point O on horizontal ground with initial speed 20 m s^{-1} and angle of projection 30° . At the instant $t \text{ s}$ after projection, the horizontal and vertically upwards displacements of P from O are $x \text{ m}$ and $y \text{ m}$ respectively.

- (i) Express x and y in terms of t and hence find the equation of the trajectory of P . [4]

P is at the same height above the ground at two points which are a horizontal distance apart of 15 m .

- (ii) Calculate this height. [3]