

A particle P is projected from a point O with speed $V \text{ m s}^{-1}$. At time $t \text{ s}$ after projection the horizontal and vertically upwards displacements of P from O are $x \text{ m}$ and $y \text{ m}$ respectively. The equation of the trajectory of P is $y = 2x - \frac{25x^2}{V^2}$.

- (i) Write down the value of $\tan \theta$, where θ is the angle of projection of P . [1]

When $t = 4$, P passes through the point A where $x = y = a$.

- (ii) Calculate V and a . [5]
- (iii) Find the direction of motion of P when it passes through A . [3]