

2. A particle P moves along the positive x -axis.

At time t seconds, $t \geq 0$

- the distance of P from the origin O is x metres
- the velocity of P is $v \text{ m s}^{-1}$ in the positive x direction
- the acceleration of P is $a \text{ m s}^{-2}$

Given that $x = 4t^3 - 21t^2 + 36t + 1$

(a) find v in terms of t ,

(2)

(b) find the distance of P from O at the instant when P is at rest for the second time,

(4)

(c) find a in terms of t .

(2)