

8. A particle, P , moves along the x -axis. At time t seconds, $t \geq 0$, the displacement, x metres, of P from the origin O , is given by $x = \frac{1}{2}t^2(t^2 - 2t + 1)$

(a) Find the times when P is instantaneously at rest.

(5)

(b) Find the total distance travelled by P in the time interval $0 \leq t \leq 2$

(3)

(c) Show that P will never move along the negative x -axis.

(2)