

17

A particle moves in a straight line with acceleration $a \text{ m s}^{-2}$, at time t seconds, where

$$a = 10 - 6t$$

The particle's velocity, $v \text{ m s}^{-1}$, and displacement, r metres, are both initially zero.

Show that

$$r = t^2(5 - t)$$

Fully justify your answer.

[4 marks]