3. A particle, *P*, moves along a straight line such that at time *t* seconds, $t \geqslant 0$, the velocity of *P*, $v\,\text{m s}^{-1}$, is modelled as

$$v = 12 + 4t - t^2$$

Find

(a) the magnitude of the acceleration of *P* when *P* is at instantaneous rest,

(5)

(b) the distance travelled by *P* in the interval $0 \leqslant t \leqslant 3$

(3)