1. *[In this question, position vectors are given relative to a fixed origin.]*

A particle P is moving with constant acceleration $(3\mathbf{i} - 2\mathbf{j})\,\text{m s}^{-2}$

At time $t = 1\,\text{s}$

- P is at the point with position vector $(5\mathbf{i} - 2\mathbf{j})\,\text{m}$
- P is moving with velocity $(-\mathbf{i} + 4\mathbf{j})\,\text{m s}^{-1}$

Find

(a) the exact speed of P at time $t = 4\,\text{s}$

(4)

(b) the position vector of P at time $t = 3\,\text{s}$

(3)