

8 A particle P is moving with constant acceleration $(-5\mathbf{i} + 2\mathbf{j})\text{ m s}^{-2}$. At time $t = 0$ seconds, P is at the origin and has velocity $(\mathbf{i} + 3\mathbf{j})\text{ m s}^{-1}$.

(a) Find, in terms of \mathbf{i} and \mathbf{j} , the displacement of P at time $t = 2$ seconds. **[2]**

(b) Determine the speed of P at time $t = 2$ seconds. **[4]**