2. A particle *P* moves under the action of a single force in such a way that at time *t* seconds, where $t \ge 0$, its velocity **v** m s⁻¹ is given by

$$\mathbf{v} = (t^2 - 3t) \mathbf{i} - 12t \mathbf{j}$$

The mass of P is 0.5 kg.

Find the time at which the magnitude of the force acting on P is 6.5 N.

