2. [*In this question,* **i** *and* **j** *are horizontal unit vectors.*]

A particle P is on a smooth horizontal plane.
The particle P is at rest under the action of three forces:

$\mathbf{F}_1 = (-\mathbf{i} + 2\mathbf{j})$ N,

$\mathbf{F}_2 = (3\mathbf{i} - 4\mathbf{j})$ N,

$\mathbf{F}_3 = (c\mathbf{i} + 2\mathbf{j})$ N, where c is a constant.

Given that P is in equilibrium,

(a) find the value of c.

(2)

The force $\mathbf{F}_3$ is now removed.

Given that the mass of P is 0.5 kg,

(b) find the acceleration of P, giving your answer in terms of **i** and **j**.

(2)