**11** In this question, the unit vector **i** is horizontal and the unit vector **j** is vertically upwards.

A particle of mass 0.8 kg moves under the action of its weight and two forces given by $(k\mathbf{i}+5\mathbf{j})$ N and $(4\mathbf{i}+3\mathbf{j})$ N. The acceleration of the particle is vertically upwards.

**(a)** Write down the value of $k$. **[1]**

Initially the velocity of the particle is $(4\mathbf{i}+7\mathbf{j})\,\mathrm{m\,s^{-1}}$.

**(b)** Find the velocity of the particle 10 seconds later. **[4]**