12 In this question the unit vectors **i** and **j** are in the x- and y-directions respectively.

The velocity $\mathbf{v}\,\text{m s}^{-1}$ of a particle is given by $\mathbf{v} = 3\mathbf{i} + (6t^2 - 5)\mathbf{j}$. The initial position of the particle is $7\mathbf{j}\,\text{m}$.

(a) Find an expression for the position vector of the particle at time t s. **[4]**

(b) Find the Cartesian equation of the path of the particle. **[2]**