4. [*In this question* **i** *and* **j** *are unit vectors directed due east and due north respectively.*]

A particle P is moving with constant velocity $(-6\mathbf{i} + 2\mathbf{j})\,\text{m s}^{-1}$

At time $t = 0$, P passes through the point with position vector $(21\mathbf{i} + 5\mathbf{j})\,\text{m}$, relative to a fixed origin O.

(a) Find the direction of motion of P, giving your answer as a bearing to the nearest degree.

(3)

(b) Write down the position vector of P at time t seconds.

(1)

(c) Find the time at which P is north-west of O.

(3)

(Total for Question 4 is 7 marks)