7. [*In this question* **i** *and* **j** *are horizontal unit vectors directed due east and due north respectively and position vectors are given relative to a fixed origin O.*]

A small boat is modelled as a particle moving with constant velocity.

At time t hours after 2 pm, the position vector of the boat is

$$[(4 - 3t)\mathbf{i} + (2 + t)\mathbf{j}]\,\text{km}$$

(a) Find the speed of the boat.

(3)

The point A has position vector $(2\mathbf{i} - \mathbf{j})\,\text{km}$

(b) Find the time of day when the bearing of the boat from A is 315°

(5)

(Total for Question 7 is 8 marks)