6 The point A has coordinates (5, 4) and the point B has coordinates (−7, −1)

The point C is such that $\overrightarrow{BC} = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$

(a) Find the coordinates of the point C.

(2)

The point D is such that $ABCD$ is a parallelogram with diagonals AC and BD.

The length of BC is 5 cm.

(b) Find the area, in cm^2, of the parallelogram $ABCD$.

(5)

$$\left[\begin{array}{l} \text{Cosine rule}: a^2 = b^2 + c^2 - 2bc\cos A \\ \text{Area of triangle} = \dfrac{1}{2}ab\sin C \end{array}\right]$$

Question 6 continued

(Total for Question 6 is 7 marks)