**7** $O$, $A$, $B$ and $C$ are fixed points such that

$$\overrightarrow{OA} = 8\mathbf{i} - 6\mathbf{j} \qquad \overrightarrow{OB} = 15\mathbf{i} - 6\mathbf{j} \qquad \overrightarrow{OC} = 8\mathbf{i} + \mathbf{j}$$

(a) Find $\overrightarrow{BC}$ as a simplified expression in terms of **i** and **j**

**(2)**

(b) Find a unit vector parallel to $\overrightarrow{BC}$

**(2)**

The point $M$ is the midpoint of $OA$ and the point $N$ lies on $OB$ such that $ON : NB = 1 : 2$

(c) Show that the points $M$, $N$ and $C$ are collinear.

**(4)**

**Question 7 continued**

**Question 7 continued**

**Question 7 continued**

**(Total for Question 7 is 8 marks)**