4 *O*, *A* and *B* are fixed points such that

$$\overrightarrow{OA} = 5\mathbf{i} + 7\mathbf{j} \qquad \overrightarrow{AB} = a\mathbf{i} + 16\mathbf{j} \qquad \text{and} \qquad |\overrightarrow{OB}| = 5\sqrt{29}$$

(a) Find the possible values of *a*

(4)

Given that $a > 0$

(b) find a unit vector that is parallel to $\overrightarrow{AB}$

(2)

Question 4 continued

(Total for Question 4 is 6 marks)