9

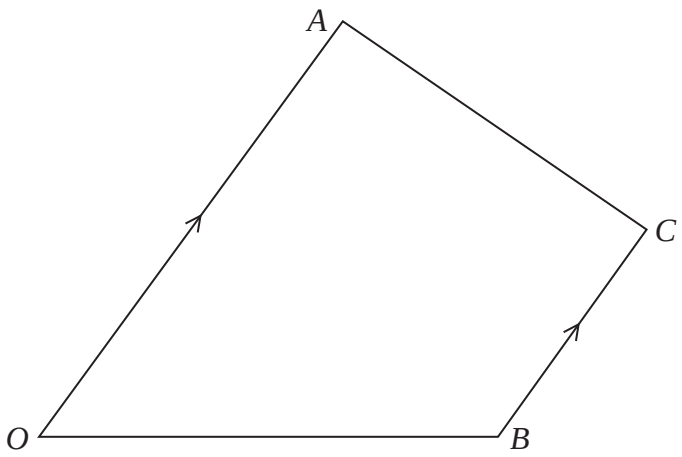

Diagram **NOT** accurately drawn

Figure 1

Figure 1 shows a trapezium $OACB$ in which OA is parallel to BC and $OA : BC = 2 : 1$

The point P lies on AC such that $AP : PC = 3 : 1$

The point D is such that $\overrightarrow{OD} = \lambda \overrightarrow{OP}$ where $\lambda > 1$ and such that BCD is a straight line.

Given that $\overrightarrow{OA} = 6\mathbf{a}$ and that $\overrightarrow{OB} = 8\mathbf{b}$

use a vector method to find and simplify an expression, in terms of **a** and **b** only, for $\overrightarrow{AD}$
Show your working clearly.

(6)

Question 9 continued

(Total for Question 9 is 6 marks)