2 Points A and C have coordinates $(-4, 6)$ and $(2, 18)$ respectively. The point B lies on the line AC such that $\overrightarrow{AB} = \frac{2}{3}\overrightarrow{AC}$.

(a) Find the coordinates of B. [2]

(b) Find the equation of the line l, which is perpendicular to AC and passes through B. [2]

(c) Find the area enclosed by the line l and the coordinate axes. [2]

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3 **(a)** Find the vector which has magnitude 39 and is in the same direction as $\begin{pmatrix} 12 \\ -5 \end{pmatrix}$. [2]

(b) Given that $\mathbf{a} = \begin{pmatrix} 2 \\ -1 \end{pmatrix}$ and $\mathbf{b} = \begin{pmatrix} -4 \\ 5 \end{pmatrix}$, find the constants λ and μ such that $5\mathbf{a} + \lambda\begin{pmatrix} 4 \\ 6 \end{pmatrix} = \mu\mathbf{b}$. [4]

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