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1. Three particles of masses $2m$, $3m$ and $4m$ are placed at the points with coordinates $(-2, 5)$, $(2, -3)$ and $(3k, k)$ respectively, where k is a constant.
The centre of mass of the three particles is at the point $(\bar{x}, \bar{y})$.

(a) Show that $\bar{x} = \dfrac{2 + 12k}{9}$

(2)

The centre of mass of the three particles lies at a point on the straight line with equation $x + 2y = 3$

(b) Find the value of k.

(4)

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Question 1 continued

Q1

(Total 6 marks)