

16.

Vectors

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7.

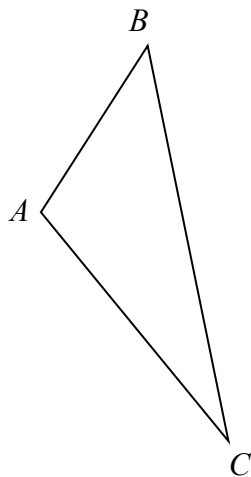


Figure 2

Figure 2 shows a sketch of a triangle ABC .

Given $\vec{AB} = 2\mathbf{i} + 3\mathbf{j} + \mathbf{k}$ and $\vec{BC} = \mathbf{i} - 9\mathbf{j} + 3\mathbf{k}$,

show that $\angle BAC = 105.9^\circ$ to one decimal place.

(5)

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Question 16 continued

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2. Relative to a fixed origin, points P , Q and R have position vectors \mathbf{p} , \mathbf{q} and \mathbf{r} respectively.

Given that

- P , Q and R lie on a straight line
- Q lies one third of the way from P to R

show that

$$\mathbf{q} = \frac{1}{3}(\mathbf{r} + 2\mathbf{p})$$

(3)

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