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6. A force **F** is given by **F** = (10**i** + **j**) N.

(a) Find the exact value of the magnitude of **F**.

(2)

(b) Find, in degrees, the size of the angle between the direction of **F** and the direction of the vector (**i** + **j**).

(4)

The resultant of the force **F** and the force (–15**i** + *a***j**) N, where *a* is a constant, is parallel to, but in the opposite direction to, the vector (2**i** – 3**j**).

(c) Find the value of *a*.

(5)

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Question 6 continued

(Total 11 marks)

Q6