6. The resultant **R** of two forces $\mathbf{F}_1$ N and $\mathbf{F}_2$ N is $(-5\mathbf{i} + 6\mathbf{j})$ N.

(a) Find the magnitude of **R**.

(2)

(b) Find, in degrees, the angle between the direction of **R** and the direction of the vector $(2\mathbf{i} + \mathbf{j})$. Show your method clearly.

(3)

Given that $\mathbf{F}_1$ is parallel to the vector $(-\mathbf{i} + 2\mathbf{j})$ and that $\mathbf{F}_2$ is parallel to the vector $(2\mathbf{i} - 3\mathbf{j})$,

(c) find $\mathbf{F}_1$ and $\mathbf{F}_2$

(4)

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Question 6 continued

(Total for Question 6 is 9 marks)