

The points A and B have position vectors $2\mathbf{i} + \mathbf{j} + \mathbf{k}$ and $\mathbf{i} - 2\mathbf{j} + 2\mathbf{k}$ respectively. The line l has vector equation $\mathbf{r} = \mathbf{i} + 2\mathbf{j} - 3\mathbf{k} + \mu(\mathbf{i} - 3\mathbf{j} - 2\mathbf{k})$.

- (a) Find a vector equation for the line through A and B . [3]
- (b) Find the acute angle between the directions of AB and l , giving your answer in degrees. [3]
- (c) Show that the line through A and B does not intersect the line l . [4]