7. The plane Π has equation

$$\mathbf{r} = \begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix} + \lambda \begin{pmatrix} 0 \\ 3 \\ -2 \end{pmatrix} + \mu \begin{pmatrix} 1 \\ 1 \\ 2 \end{pmatrix}$$

where λ and μ are scalar parameters.

(a) Determine a vector perpendicular to Π

(2)

The line l meets Π at the point (1, 2, 3) and passes through the point (1, 0, 1)

(b) Determine the size of the acute angle between Π and l

Give your answer to the nearest degree.

(4)

(c) Determine the shortest distance between Π and the point (6, −3, −6)

(4)

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Question 7 continued

(Total for Question 7 is 10 marks)