6. The plane Π has equation

$$\mathbf{r} = \begin{pmatrix} -1 \\ 5 \\ 2 \end{pmatrix} + \lambda \begin{pmatrix} 2 \\ 0 \\ 7 \end{pmatrix} + \mu \begin{pmatrix} 3 \\ -2 \\ 3 \end{pmatrix}$$

where λ and μ are scalar parameters.

(a) Determine a vector perpendicular to Π

(2)

The line l passes through the point $A(1, 7, 3)$ and meets Π at the point $B(-1, 5, 2)$

The acute angle between Π and l is α

(b) Determine the value of α to the nearest degree.

(4)

(c) Determine the exact shortest distance from A to Π

(4)

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