**5** The plane $\Pi$ has equation $\mathbf{r} = 2\mathbf{i} + 3\mathbf{j} - 2\mathbf{k} + \lambda(\mathbf{i} - 2\mathbf{j} - \mathbf{k}) + \mu(3\mathbf{i} + 2\mathbf{j} - 2\mathbf{k})$.

**(a)** Find a Cartesian equation of $\Pi$, giving your answer in the form $ax + by + cz = d$. [4]

The point $P$ has position vector $4\mathbf{i} + 2\mathbf{j} + 9\mathbf{k}$.

**(b)** Find the position vector of the foot of the perpendicular from $P$ to $\Pi$. [4]

**(c)** The line $l$ is parallel to the vector $3\mathbf{i} + 5\mathbf{j} - \mathbf{k}$.

Find the acute angle between $l$ and $\Pi$. [3]