

1. With respect to a fixed origin O , the lines l_1 and l_2 are given by the equations

$$l_1: \mathbf{r} = (10\mathbf{i} - 9\mathbf{k}) + \lambda(-\mathbf{i} + \mathbf{j} + 2\mathbf{k})$$

$$l_2: \mathbf{r} = (17\mathbf{i} + \mathbf{j} + 3\mathbf{k}) + \mu(5\mathbf{i} - \mathbf{j} + 3\mathbf{k})$$

where λ and μ are scalar parameters.

Show that l_1 and l_2 meet and find the position vector of their point of intersection.

(6)