

Question	Answer	Marks	Guidance
(a)	Express general point of l or m in component form, i.e. $(-1+2\lambda, 3-\lambda, 4-\lambda)$ or $(5+a\mu, 4+b\mu, 3+\mu)$	B1	
	Equate components and eliminate either λ or μ	M1	e.g. $\mu = \frac{2}{1-b}$, $\lambda = \frac{-1-b}{1-b}$, $\mu = \frac{-4}{2+a}$, $\lambda = \frac{a+6}{a+2}$
	Eliminate the other parameter or obtain a second expression in the first	M1	λ and μ are not required to be the subject of the equations.
	Show intermediate steps to obtain $2b-a=4$	A1	AG
	Alternative method for question (a)		
	Express general point of l or m in component form, i.e. $(-1+2\lambda, 3-\lambda, 4-\lambda)$ or $(5+a\mu, 4+b\mu, 3+\mu)$	B1	
	Express a or b in terms of λ and μ	M1	$a = \frac{2\lambda-6}{\mu}$, $b = \frac{-1-\lambda}{\mu}$
	Use $\lambda=1-\mu$	M1	
	Obtain $2b-a=4$	A1	AG
		4	
(b)	Using the correct process equate the scalar product of the direction vectors to zero	*M1	$(2\mathbf{i} - \mathbf{j} - \mathbf{k}) \cdot (a\mathbf{i} + b\mathbf{j} + \mathbf{k}) = 0$ SOI.
	Obtain $2a-b-1=0$	A1	OE e.g. $2(2b-4)-b-1=0$
	Solve simultaneous equations for a or for b	DM1	
	Obtain $a=2, b=3$	A1	
		4	

Question	Answer	Marks	Guidance
(c)	Substitute found values in component equations and solve for λ or for μ	M1	
	Obtain answer $3\mathbf{i} + \mathbf{j} + 2\mathbf{k}$ from either $\lambda = 2$ or $\mu = -1$	A1	Accept as coordinates or equivalent.
		2	

