Question	Scheme	Marks	AOs
4(a)	$\mathbf{MN} = \begin{pmatrix} 2k-24 & 0 & 0 \\ k^2-7k+10 & 6k-44 & -10k+50 \\ 4k-20 & 0 & -14 \end{pmatrix}$	B1 B1	1.1b 1.1b
		(2)	
(b)(i)	$\mathbf{MN} = \begin{pmatrix} -14 & 0 & 0 \\ 0 & -14 & 0 \\ 0 & 0 & -14 \end{pmatrix}$	B1ft	1.1b
(ii)	$\mathbf{M}^{-1} = -\frac{1}{14}\begin{pmatrix} -2 & 6 & -10 \\ 2 & -20 & 24 \\ -3 & 2 & -1 \end{pmatrix}$	B1	1.1b
		(2)	
(c)	$\mathbf{M}^{-1} = -\frac{1}{14}\begin{pmatrix} -2 & 6 & -10 \\ 2 & -20 & 24 \\ -3 & 2 & -1 \end{pmatrix}\begin{pmatrix} 2 \\ 3 \\ -1 \end{pmatrix} = \ldots$	M1	1.1b
	$\left(-\frac{12}{7}, \frac{40}{7}, -\frac{1}{14}\right)$	A1	1.1b
		(2)	
(d)	The coordinates of the only point at which the **planes** represented by the equations in (c) meet.	B1	2.2a
		(1)	
			(7 marks)

Notes

(a)

B1: For 2 correct rows or 2 correct columns (allow unsimplified)

B1: Fully correct simplified matrix

(b)(i)

B1ft: Correct matrix (follow through from part (a)). If an error with part (a) allow the correct matrix stated, restart use of calculator.

(ii)

B1: Deduces the correct inverse matrix, may use calculator

(c)

M1: Any complete method to find the values of x, y and z (Must be using **their inverse** if using the method in the main scheme)

Allow use of a calculator

A1: Correct exact coordinates (allow as a vector or $x = \ldots$, $y = \ldots$, $z = \ldots$)

(d)

B1: Describes the correct geometrical configuration of the **planes**