Question Number	Scheme	Marks
7(a)	$\begin{vmatrix} 4 & -5 \\ -3 & 2 \end{vmatrix} = 8-15 = -7 \Rightarrow \text{Area } T' = "\pm 7" \times 23 = ...$	M1
	$\text{Area } T' = 161$	A1 (2)
(b)	$\begin{pmatrix} 4 & -5 \\ -3 & 2 \end{pmatrix}\begin{pmatrix} 3p+2 \\ 2p-1 \end{pmatrix} = \begin{pmatrix} 17 \\ -18 \end{pmatrix}$ or $\begin{pmatrix} 3p+2 \\ 2p-1 \end{pmatrix} = \frac{1}{8-15}\begin{pmatrix} 2 & 5 \\ 3 & 4 \end{pmatrix}\begin{pmatrix} 17 \\ -18 \end{pmatrix}$	
	$4(3p+2)-5(2p-1)=17$ or $-3(3p+2)+2(2p-1)=-18$ or $3p+2=-\frac{1}{7}(34-90)$ or $2p-1=-\frac{1}{7}(51-72)$ $(\text{e.g. } 2p+13=17 \Rightarrow .....)$	M1
	$p=2$	A1 (2)
(c)	Rotation; through 90° clockwise (or 270° anticlockwise) about origin	B1;B1 (2)
(d)	**CA** = **B**	
	$\mathbf{A}^{-1} = -\frac{1}{7}\begin{pmatrix} 2 & 5 \\ 3 & 4 \end{pmatrix}$ or $\begin{pmatrix} a & b \\ c & d \end{pmatrix}\begin{pmatrix} 4 & -5 \\ -3 & 2 \end{pmatrix} = \begin{pmatrix} 4a-3b & -5a+2b \\ 4c-3d & -5c+2d \end{pmatrix}$	B1
	$\mathbf{C} = -\frac{1}{7}\begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}\begin{pmatrix} 2 & 5 \\ 3 & 4 \end{pmatrix} = ...$ or $\begin{cases} 4a-3b=0 & -5a+2b=1 \\ 4c-3d=-1 & -5c+2d=0 \end{cases} \Rightarrow ...$	M1
	$\mathbf{C} = -\frac{1}{7}\begin{pmatrix} 3 & 4 \\ -2 & -5 \end{pmatrix}$ or $\begin{pmatrix} -\frac{3}{7} & -\frac{4}{7} \\ \frac{2}{7} & \frac{5}{7} \end{pmatrix}$ oe	A1 (3)
		[9]

(a)

M1 Attempts to find the determinant of **M** and use as a scale factor. Accept if a slip in calculation is made and accept if negative is used for this mark. Dividing by the determinant is M0.

A1 Correct answer only. No working needed (correct answer implies the method).

(b)

M1 Form a matrix equation using either **A** or an attempt at $\mathbf{A}^{-1}$, obtain a linear equation and solve for *p*.

A1 Correct value for *p*, obtained from a correct equation. (No need to check in other equation.)

(c)

B1 Rotation, rotates, rotate or rotating (oe) Accept "turn"

B1 Correct angle (degrees or radians) with direction specified and about origin or (0, 0)

(d)

B1 Correct matrix for $\mathbf{A}^{-1}$ May have been found in (b) but must be used in (d). Alternatively, correct **CA** with unknowns for entries of **C**.

M1 Multiply **B** by $\mathbf{A}^{-1}$ **on the right.** Alternatively, sets **CA** equal to **B** and solves equations.

A1 Correct matrix **C**(isw after a correct answer).