Question Number	Scheme	Notes	Marks
1(i)	$\mathbf{A}=\begin{pmatrix}3k & 4k-1\\ 2 & 6\end{pmatrix}$		
(a)	$3k\times 6-2(4k-1)=0\Rightarrow k=...$ Forms det **A** = 0 and solves for *k*. The " = 0" can be implied by a solution for *k*. Award for $3k\times 6-2(4k-1)=0\Rightarrow k=...$ If LHS is only seen expanded 2 terms of $18k-8k+2$ must be correct (implied by $10k$) May use $ad=bc$ and condone $\det\mathbf{A}=bc-ad=0$ but clear use of *ad* + *bc* is M0		**M1**
	$(10k+2=0\Rightarrow k=)-\frac{1}{5}$ or -0.2	A1: Correct value. Accept $-\frac{2}{10}$	**A1**
			(2)
(b)	$(\mathbf{A}^{-1}=)\ \frac{1}{10k+2}\begin{pmatrix}6 & 1-4k\\ -2 & 3k\end{pmatrix}$ or $\begin{pmatrix}\frac{6}{10k+2} & \frac{1-4k}{10k+2}\\ \frac{-2}{10k+2} & \frac{3k}{10k+2}\end{pmatrix}$ or e.g., $\begin{pmatrix}\frac{3}{5k+1} & \frac{1-4k}{10k+2}\\ \frac{-1}{5k+1} & \frac{3k}{10k+2}\end{pmatrix}$ M1: for $...\begin{pmatrix}6 & 1-4k\\ -2 & 3k\end{pmatrix}$ Ignore any multiplier and accept without one and condone if this matrix is labelled as $\mathbf{A}^{-1}$. Allow unsimplified e.g., $...\begin{pmatrix}6 & -(4k-1)\\ -2 & 3k\end{pmatrix}$ Allow if determinant incorporated provided it is clear that the elements of Adj(**A**) are correct A1ft: $\frac{1}{"10k+2"}\begin{pmatrix}6 & 1-4k\\ -2 & 3k\end{pmatrix}$ Fully correct inverse ft their determinant in form $ak+b\quad a,b\neq 0$ and simplified but if determinant incorporated there is no requirement to write e.g., $\frac{6}{10k+2}$ as $\frac{3}{5k+1}$. Allow different brackets e.g., [...], {...} but $\lvert...\rvert$ is M0 if followed by an attempt at det(Adj(**A**)). Allow if "×" is between fraction and matrix and allow fraction to appear on the right of the matrix. Isw when a correct answer is seen but this mark is not available if they substitute a value of *k* into the determinant and/or matrix.		**M1** **A1ft**
			(2)
(ii)(a)	$p=q=-2$ or $(\mathbf{B}=)\begin{pmatrix}-2 & 0\\ 0 & -2\end{pmatrix}$	Both values identified or correct matrix (any or no bracket). Allow "Both are -2" or "-2, -2"	**B1**
(b)	$p=-1\quad q=1$ or $(\mathbf{B}=)\begin{pmatrix}-1 & 0\\ 0 & 1\end{pmatrix}$	Both values identified or correct matrix (any or no bracket). Allow "-1, +1" (Mark in order presented). No trig expressions.	**B1**
			(2)
			Total 6