Advanced Higher Maths
SQA 2017 Paper
Question 7

Advanced Higher Maths
Maths.scot

Matrices P and Q are defined by $P=\begin{pmatrix} x & 2 \\ -5 & -1 \end{pmatrix}$ and $Q=\begin{pmatrix} 2 & -3 \\ 4 & y \end{pmatrix}$, where $x, y \in \mathbb{R}$.

(a) Given the determinant of P is 2, obtain:

(i) The value of x. **1**

(ii) P^{-1}. **1**

(iii) $P^{-1}Q'$, where Q' is the transpose of Q. **2**

(b) The matrix R is defined by $R=\begin{pmatrix} 5 & -2 \\ z & -6 \end{pmatrix}$, where $z \in \mathbb{R}$.

Determine the value of z such that R is singular. **2**

Answers:

(a) (i) $x = 8$

(ii) $\frac{1}{2}\begin{pmatrix} -1 & -2 \\ 5 & 8 \end{pmatrix}$

(iii) $\begin{pmatrix} 2 & -2-y \\ -7 & 10+4y \end{pmatrix}$

(b) $z = 15$