Advanced Higher Maths
SQA 2018 Paper
Question 7

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Matrices C and D are given by:

$$C = \begin{pmatrix} -2 & 1 & 2 \\ 1 & -1 & 0 \\ 1 & 0 & -1 \end{pmatrix} \quad \text{and} \quad D = \begin{pmatrix} 1 & 1 & 2 \\ k+3 & 0 & 2 \\ 1 & 1 & 1 \end{pmatrix}, \text{ where } k \in \mathbb{R}.$$

(a) Obtain $2C' - D$ where C' is the transpose of C. **2**

(b) (i) Find and simplify an expression for the determinant of D. **2**

(ii) State the value of k such that D^{-1} does not exist. **1**

Answers:

(a) $\begin{pmatrix} -5 & 1 & 0 \\ -k-1 & -2 & -2 \\ 3 & -1 & -3 \end{pmatrix}$

(b) (i) $k + 3$

(ii) $k = -3$