7 $\mathbf{A} = \begin{pmatrix} 10 & -6 \\ -8 & 5 \end{pmatrix}$ $\mathbf{B} = \begin{pmatrix} -15 & 10 \\ 14 & -5 \end{pmatrix}$ $\mathbf{C} = \begin{pmatrix} 1 & -3 & 1 \\ 2 & -4 & -2 \end{pmatrix}$

(a) Find $4\mathbf{A} + 2\mathbf{B}$

(2)

(b) Find $\mathbf{AC}$

(3)

(c) Find the matrix $\mathbf{D}$ such that $\mathbf{A}^{-1} + \mathbf{D} = 2\mathbf{I}$ where $\mathbf{I} = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$

(4)

$$\left[\text{The inverse of matrix } \begin{pmatrix} a & b \\ c & d \end{pmatrix} \text{ is } \frac{1}{ad - bc} \begin{pmatrix} d & -b \\ -c & a \end{pmatrix} \right]$$

Question 7 continued

(Total for Question 7 is 9 marks)