1. Given that

$$\mathbf{A} = \begin{pmatrix} 2 & -1 & 3 \\ -2 & 3 & 0 \end{pmatrix} \quad \text{and} \quad \mathbf{B} = \begin{pmatrix} 1 & k \\ 0 & -3 \\ 2k & 2 \end{pmatrix}$$

where k is a non-zero constant,

(a) determine the matrix **AB**

(2)

(b) determine the value of k for which $\det(\mathbf{AB}) = 0$

(3)

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Question 1 continued

(Total for Question 1 is 5 marks)