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Engineering Maths Exam
ACMA4006

(a)(i) AB

$$A = \begin{pmatrix} 2 & -5 & 3 \\ -5 & 0 & 5 \\ 3 & 0 & 2 \end{pmatrix} \quad B = \begin{pmatrix} -5 & 8 & 0 \\ 2 & 6 & 2 \\ 0 & -2 & 3 \end{pmatrix}$$

$3 \times 3 \quad \quad \quad 3 \times 3$

$$\begin{pmatrix} -10 + -10 + 0 & 16 - 30 - 6 & 0 - 10 + 9 \\ 25 + 0 + 0 & -40 + 0 - 10 & 0 + 0 + 15 \\ -15 + 0 + 0 & 24 + 0 - 4 & 0 + 0 + 6 \end{pmatrix}$$

$$AB = \begin{pmatrix} -20 & -20 & -1 \\ 25 & -50 & 15 \\ -15 & 20 & 6 \end{pmatrix}$$

(ii) BA

$$B = \begin{pmatrix} -5 & 8 & 0 \\ 2 & 6 & 2 \\ 0 & -2 & 3 \end{pmatrix} \quad A = \begin{pmatrix} 2 & -5 & 3 \\ -5 & 0 & 5 \\ 3 & 0 & 2 \end{pmatrix}$$

$$\begin{array}{ccc} -10 - 40 + 0 & 25 + 0 + 0 & -15 + 40 + 0 \\ 4 - 30 + 6 & -10 + 0 + 0 & 6 + 30 + 4 \\ 0 + 10 + 9 & 0 + 0 + 0 & 0 - 10 + 6 \end{array}$$

$$BA = \begin{pmatrix} -50 & 25 & 25 \\ -20 & -10 & 40 \\ 9 & 0 & -4 \end{pmatrix}$$