

QUESTION

Evaluate the product \mathbf{AB} of the matrices

$$\mathbf{A} = \begin{pmatrix} -2 & 0 \\ 1 & 1 \\ 2 & -2 \end{pmatrix}, \quad \mathbf{B} = \begin{pmatrix} 1 & 2 & -2 \\ -1 & 0 & 1 \end{pmatrix}.$$

ANSWER

$$\begin{aligned} \mathbf{AB} &= \begin{pmatrix} -2 & 0 \\ 1 & 1 \\ 2 & -2 \end{pmatrix} \begin{pmatrix} 1 & 2 & -2 \\ -1 & 0 & 1 \end{pmatrix} \\ &= \begin{pmatrix} -2+0 & -4+0 & 4+0 \\ 1-1 & 2+0 & -2+1 \\ 2+2 & 4+0 & -4-2 \end{pmatrix} \\ &= \begin{pmatrix} -2 & -4 & 4 \\ 0 & 2 & -1 \\ 4 & 4 & -6 \end{pmatrix} \end{aligned}$$