

(1) You are given two matrices

$$A = \begin{pmatrix} 2 & 1 \\ 0 & -2 \end{pmatrix}$$

and

$$B = \begin{pmatrix} -1 & -2 & 7 \\ -2 & 2 & -1 \end{pmatrix}$$

Please calculate the product $A \cdot B$

(2) Give the transpose of B (that is B^t)

(3) Is $C = \begin{pmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$ an orthogonal matrix.