演習 3.1　回答

1.

$$\hat{A}\hat{B} = \begin{pmatrix} 2 & 6 & 4 \\ 3 & -1 & 3 \\ 0 & 6 & 2 \end{pmatrix}.$$

2. 可換

3.

$$\hat{A}\hat{B} = \begin{pmatrix} -2 & -4 & -4 \\ 6 & 8 & -12 \\ -4 & -4 & 14 \end{pmatrix}.$$

4.

$$\hat{A}^3 = \begin{pmatrix} 1331 & 0 & 3993 \\ 0 & 0 & 0 \\ 0 & 0 & 1331 \end{pmatrix}$$

5.

$$^t(\hat{A}\hat{B}) = \begin{pmatrix} 2 & 0 & 2 \\ 2 & 2 & 2 \\ 0 & 2 & 2 \end{pmatrix}.$$

6. 正則ではない.

7.

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

8.

$$\hat{S} = \begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}, \qquad \hat{A} = \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}.$$