

Quiz7

1. P271 (16)

$$A = \begin{bmatrix} 2 & -1 & 3 \\ -2 & 1 & 4 \\ 1 & 2 & -2 \end{bmatrix}, \quad B = \begin{bmatrix} -1 & 3 & 0 \\ -3 & 1 & 0 \\ 0 & 0 & -2 \end{bmatrix}, \quad C = \begin{bmatrix} -1 & 1 \\ -2 & 2 \\ 2 & 0 \end{bmatrix}$$

$$a = [-1 \ -2 \ 0], \quad b = \begin{bmatrix} 3 \\ -1 \\ 1 \end{bmatrix}$$

(1)BC

$$BC = \begin{bmatrix} -1 & 3 & 0 \\ -3 & 1 & 0 \\ 0 & 0 & -2 \end{bmatrix} \begin{bmatrix} -1 & 1 \\ -2 & 2 \\ 2 & 0 \end{bmatrix} = \begin{bmatrix} -7 & 5 \\ -5 & -1 \\ 4 & 0 \end{bmatrix}$$

(2)

$$C^T = \begin{bmatrix} 1 & -2 & 2 \\ 1 & 2 & 0 \end{bmatrix}, \quad BC^T = \begin{bmatrix} -1 & 3 & 0 \\ -3 & 1 & 0 \\ 0 & 0 & -2 \end{bmatrix} \begin{bmatrix} 1 & -2 & 2 \\ 1 & 2 & 0 \end{bmatrix} \neq \text{不符合定義}$$

(3)

$$Bb = \begin{bmatrix} -1 & 3 & 0 \\ -3 & 1 & 0 \\ 0 & 0 & -2 \end{bmatrix} \begin{bmatrix} 3 \\ -1 \\ 1 \end{bmatrix} = \begin{bmatrix} -6 \\ -10 \\ 2 \end{bmatrix}$$

(4)

$$b^T = [3 \ -1 \ 1], \quad b^T B = [3 \ -1 \ 1] \begin{bmatrix} -1 & 3 & 0 \\ -3 & 1 & 0 \\ 0 & 0 & -2 \end{bmatrix} = [0 \ 8 \ 2]$$

2. P280 (1)

$$1. -3x + 8y = 5 \quad (1)$$

$$8x - 12y = -11 \quad (2)$$

$$\begin{bmatrix} -3 & 8 & 5 \\ 8 & -12 & -11 \end{bmatrix}$$

$$= \begin{bmatrix} -3 & 8 & 5 \\ 8 & \frac{28}{3} & \frac{7}{3} \end{bmatrix}$$

$$y = \frac{1}{4}, x = -1$$