

## Non-book problems

①

Let  $S = \{0\}$  be the set containing only the zero vector.

- Explain why  $S$  must be linearly dependent.
- Explain why any set containing a zero vector must be linearly dependent.

②

For the partitioned matrices

$$A = \left( \begin{array}{c|cc|ccc} 1 & 0 & 0 & 3 & 3 & 3 \\ 1 & 0 & 0 & 3 & 3 & 3 \\ \hline 1 & 2 & 2 & 0 & 0 & 0 \end{array} \right)$$

$$\text{and } B = \left( \begin{array}{cc} \hline -1 & -1 \\ 0 & 0 \\ 0 & 0 \\ \hline -1 & -2 \\ -1 & -2 \\ -1 & -2 \end{array} \right)$$

use block multiplication with the indicated partitions to form the product  $AB$ .