$$A\vec{x} = \vec{0}, \quad A = [\vec{a}_1, \cdots, \vec{a}_n] \Rightarrow \sum_{i=1}^{n} \vec{a}_i = \vec{0}$$

$$\therefore \vec{a}_n = -\sum_{i=1}^{n-1} \vec{a}_i,$$

$$E = \begin{bmatrix} 1 & 0 & \cdots & 0 & 1 \\ 0 & 1 & 0 & \cdots & 0 & 1 \\ & & 1 & & & 1 \\ & & & \ddots & & \vdots \\ 0 & & \cdots & & 0 & 1 \end{bmatrix} \text{ 라 하면 } |E| = 1$$

$$AE = [\vec{a}_1, \vec{a}_2, \cdots, \vec{a}_1 + \cdots + \vec{a}_{n-1} + \vec{a}_n] = [\vec{a}_1, \vec{a}_2, \cdots, \vec{a}_{n-1}, \vec{0}]$$

$$0 = |AE| = |A||E| = |A|$$

$$\therefore |A| = 0.$$