$$Z = \begin{bmatrix} 0 & 0 & a_1 & b_1 \\ 0 & 0 & a_2 & b_2 \\ a_3 & b_3 & 0 & 0 \\ a_4 & b_4 & 0 & 0 \end{bmatrix} = \left[\begin{array}{cc|c} 0 & & C_1 \\ \hline C_2 & & 0 \end{array}\right]$$

$$\det(Z) = 0 - C_1 C_2 = - \begin{bmatrix} a_1 & b_1 \\ a_2 & b_2 \end{bmatrix} \begin{bmatrix} a_3 & b_3 \\ a_4 & b_4 \end{bmatrix}$$

$$= - (a_1 b_2 - b_1 a_2)(a_3 b_4 - a_4 b_3)$$

$$K = \left[\begin{array}{cc|cc} a_1 & 0 & 0 & b_1 \\ 0 & a_2 & b_2 & 0 \\ \hline 0 & b_3 & a_3 & 0 \\ b_4 & 0 & 0 & a_4 \end{array}\right] = \left[\begin{array}{c|c} C_1 & C_2 \\ \hline C_3 & C_4 \end{array}\right]$$

$$\det(K) = C_1 C_4 - C_2 C_3 = a_1 a_2 a_3 a_4 - b_1 b_2 b_3 b_4$$