

Find the inverse of the matrix $\mathbf{A} = \begin{bmatrix} 2 & 2 & 3 \\ -2 & 1 & 1 \\ 3 & 1 & 1 \end{bmatrix}$. [103 海洋輪機 5]

[解] $|\mathbf{A}| = 2 - 6 + 6 - 9 - 2 + 4 = -5$

$$\mathbf{A}^{-1} = \frac{1}{|\mathbf{A}|} \begin{bmatrix} \begin{vmatrix} 1 & 1 \\ 1 & 1 \end{vmatrix} & -\begin{vmatrix} 2 & 3 \\ 1 & 1 \end{vmatrix} & \begin{vmatrix} 2 & 3 \\ 1 & 1 \end{vmatrix} \\ -\begin{vmatrix} -2 & 1 \\ 3 & 1 \end{vmatrix} & \begin{vmatrix} 2 & 3 \\ 2 & 3 \end{vmatrix} & -\begin{vmatrix} 2 & 3 \\ -2 & 1 \end{vmatrix} \\ \begin{vmatrix} -2 & 1 \\ 3 & 1 \end{vmatrix} & -\begin{vmatrix} 2 & 2 \\ 2 & 2 \end{vmatrix} & \begin{vmatrix} 2 & 2 \\ -2 & 1 \end{vmatrix} \end{bmatrix} = \frac{1}{-5} \begin{bmatrix} 0 & 1 & -1 \\ 5 & -7 & -8 \\ -5 & 4 & 6 \end{bmatrix}$$

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