۹۵۳۱۴۰۵ مهسا ببیران

$$\begin{bmatrix} 1 & 1 & 0 & 0 & 0 \\ -1 & 1 & 1 & 0 & 0 \\ 0 & -1 & 1 & 1 & 0 \\ 0 & 0 & -1 & 1 & 1 \\ 0 & 0 & 0 & -1 & 1 \end{bmatrix} \xrightarrow{R_1 + R_2 \to R_2}$$

$$\begin{bmatrix} 1 & 1 & 0 & 0 & 0 \\ 0 & 2 & 1 & 0 & 0 \\ 0 & -1 & 1 & 1 & 0 \\ 0 & 0 & -1 & 1 & 1 \\ 0 & 0 & 0 & -1 & 1 \end{bmatrix} \xrightarrow{R_3 + \frac{1}{2}R_2 \to R_3} \begin{bmatrix} 1 & 1 & 0 & 0 & 0 \\ 0 & 2 & 1 & 0 & 0 \\ 0 & 0 & \frac{3}{2} & 1 & 0 \\ 0 & 0 & -1 & 1 & 1 \\ 0 & 0 & 0 & -1 & 1 \end{bmatrix}$$

$$1 \times \underbrace{\begin{vmatrix} 2 & 1 & 0 & 0 \\ 0 & \frac{3}{2} & 1 & 0 \\ 0 & -1 & 1 & 1 \\ 0 & 0 & -1 & 1 \end{vmatrix}} - 1 \times \underbrace{\begin{vmatrix} 0 & 1 & 0 & 0 \\ 0 & \frac{3}{2} & 1 & 0 \\ 0 & -1 & 1 & 1 \\ 0 & 0 & -1 & 1 \end{vmatrix}}_{\text{صفر}} + 0 - 0 + 0 =$$

$$= 2 \times \begin{vmatrix} \frac{3}{2} & 1 & 0 \\ -1 & 1 & 1 \\ 0 & -1 & 1 \end{vmatrix} - 1 \times \underbrace{\begin{vmatrix} 0 & 1 & 0 \\ 0 & 1 & 1 \\ 0 & -1 & 1 \end{vmatrix}}_{=0} =$$

$$2 \times \begin{vmatrix} \frac{3}{2} & 1 & 0 \\ -1 & 1 & 1 \\ 0 & -1 & 1 \end{vmatrix} = 2 \times \Big(\underbrace{\tfrac{3}{2} \times 2 - (1 \times -1)}_{3 + 1} \Big) = 2 \times 4 = \boxed{8}$$