

$$A = \begin{pmatrix} 1 & -2 & 2 \\ -1 & 1 & 3 \\ 1 & -1 & -4 \end{pmatrix}$$

$$|A| = \begin{vmatrix} 1 & -2 & 2 \\ -1 & 1 & 3 \\ 1 & -1 & -4 \end{vmatrix} = 1$$

$$a_{11} : \begin{pmatrix} \textcolor{red}{1} & \textcolor{red}{-2} & \textcolor{red}{2} \\ \textcolor{red}{-1} & 1 & 3 \\ \textcolor{red}{1} & -1 & -4 \end{pmatrix} \quad a_{11} = \begin{vmatrix} 1 & 3 \\ -1 & -4 \end{vmatrix} = -1 \quad A^{-1} = \frac{1}{|A|} \begin{pmatrix} -1 & & \\ & & \\ & & \end{pmatrix}$$

$$a_{12} : \textcolor{red}{12} \rightarrow \textcolor{red}{21} \begin{pmatrix} \textcolor{red}{1} & -2 & 2 \\ \textcolor{red}{-1} & \textcolor{red}{1} & \textcolor{red}{3} \\ \textcolor{red}{1} & -1 & -4 \end{pmatrix} \quad a_{12} = - \begin{vmatrix} -2 & 2 \\ -1 & -4 \end{vmatrix} = 10 \quad A^{-1} = \begin{pmatrix} -1 & -10 & \\ & & \\ & & \end{pmatrix}$$

$$a_{13} : \textcolor{red}{13} \rightarrow \textcolor{red}{31} \begin{pmatrix} \textcolor{red}{1} & -2 & 2 \\ \textcolor{red}{-1} & 1 & 3 \\ \textcolor{red}{1} & \textcolor{red}{-1} & \textcolor{red}{-4} \end{pmatrix} \quad a_{13} = \begin{vmatrix} -2 & 2 \\ 1 & 3 \end{vmatrix} = -8 \quad A^{-1} = \begin{pmatrix} -1 & -10 & -8 \\ & & \\ & & \end{pmatrix}$$

$$a_{21} : \textcolor{red}{21} \rightarrow \textcolor{red}{12} \begin{pmatrix} \textcolor{red}{1} & -2 & 2 \\ -1 & \textcolor{red}{1} & 3 \\ 1 & -1 & -4 \end{pmatrix} \quad a_{21} = - \begin{vmatrix} -1 & 3 \\ 1 & -4 \end{vmatrix} = -1 \quad A^{-1} = \begin{pmatrix} -1 & -10 & -8 \\ -1 & & \\ & & \end{pmatrix}$$

$$a_{22} : \begin{pmatrix} 1 & \textcolor{red}{-2} & 2 \\ \textcolor{red}{-1} & \textcolor{red}{1} & \textcolor{red}{3} \\ 1 & \textcolor{red}{-1} & -4 \end{pmatrix} \quad a_{22} = \begin{vmatrix} 1 & 2 \\ 1 & -4 \end{vmatrix} = -6 \quad A^{-1} = \begin{pmatrix} -1 & -10 & -8 \\ -1 & -6 & \\ & & \end{pmatrix}$$

$$a_{23} : \textcolor{red}{23} \rightarrow \textcolor{red}{32} \begin{pmatrix} 1 & \textcolor{red}{-2} & 2 \\ -1 & \textcolor{red}{1} & 3 \\ \textcolor{red}{1} & \textcolor{red}{-1} & \textcolor{red}{-4} \end{pmatrix} \quad a_{23} = - \begin{vmatrix} 1 & 2 \\ -1 & 3 \end{vmatrix} = -5 \quad A^{-1} = \begin{pmatrix} -1 & -10 & -8 \\ -1 & -6 & -5 \\ & & \end{pmatrix}$$

$$a_{31} : \textcolor{red}{31} \rightarrow \textcolor{red}{13} \begin{pmatrix} \textcolor{red}{1} & -2 & 2 \\ -1 & 1 & \textcolor{red}{3} \\ 1 & -1 & \textcolor{red}{-4} \end{pmatrix} \quad a_{31} = \begin{vmatrix} -1 & 1 \\ 1 & -1 \end{vmatrix} = 0 \quad A^{-1} = \begin{pmatrix} -1 & -10 & -8 \\ -1 & -6 & -5 \\ 0 & & \end{pmatrix}$$

$$a_{32} : \textcolor{red}{32} \rightarrow \textcolor{red}{23} \begin{pmatrix} 1 & -2 & \textcolor{red}{2} \\ \textcolor{red}{-1} & \textcolor{red}{1} & \textcolor{red}{3} \\ 1 & -1 & \textcolor{red}{-4} \end{pmatrix} \quad a_{32} = - \begin{vmatrix} 1 & -2 \\ 1 & -1 \end{vmatrix} = -1 \quad A^{-1} = \begin{pmatrix} -1 & -10 & -8 \\ -1 & -6 & -5 \\ 0 & -1 & \end{pmatrix}$$

$$a_{33} : \begin{pmatrix} 1 & -2 & \textcolor{red}{2} \\ -1 & 1 & \textcolor{red}{3} \\ \textcolor{red}{1} & \textcolor{red}{-1} & \textcolor{red}{-4} \end{pmatrix} \quad a_{33} = \begin{vmatrix} 1 & -2 \\ -1 & 1 \end{vmatrix} = -1 \quad A^{-1} = \begin{pmatrix} -1 & -10 & -8 \\ -1 & -6 & -5 \\ 0 & -1 & -1 \end{pmatrix}$$

$$A^{-1} = \begin{pmatrix} -1 & -10 & -8 \\ -1 & -6 & -5 \\ 0 & -1 & -1 \end{pmatrix}$$