

Group: _____ Present: _____

1. Use Cramer's Rule to solve $AX = B$, where $A = \begin{pmatrix} 2 & 3 & -1 \\ 1 & 0 & 2 \\ -1 & 1 & 3 \end{pmatrix}$, $X = \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix}$,

$$B = \begin{pmatrix} 4 \\ 0 \\ 2 \end{pmatrix}$$

First, $|A| =$

Then:

2. Find the adjoint of $A = \begin{pmatrix} 2 & 3 & -1 \\ 1 & 0 & 2 \\ -1 & 1 & 3 \end{pmatrix}$. First, find the matrix of cofactors

$$\begin{pmatrix} C_{11} = \begin{vmatrix} | & | & | \end{vmatrix} & C_{12} = \begin{vmatrix} | & | & | \end{vmatrix} & C_{13} = \begin{vmatrix} | & | & | \end{vmatrix} \\ C_{21} = \begin{vmatrix} | & | & | \end{vmatrix} & C_{22} = \begin{vmatrix} | & | & | \end{vmatrix} & C_{23} = \begin{vmatrix} | & | & | \end{vmatrix} \\ C_{31} = \begin{vmatrix} | & | & | \end{vmatrix} & C_{32} = \begin{vmatrix} | & | & | \end{vmatrix} & C_{33} = \begin{vmatrix} | & | & | \end{vmatrix} \end{pmatrix} = \begin{pmatrix} & & \\ & & \\ & & \end{pmatrix}$$

$$\text{Hence } \text{adj}(A) = \begin{pmatrix} & & \\ & & \\ & & \end{pmatrix}$$

3. Use the result of # 2 to find A^{-1} :

$$\det(A) =$$

$$\text{Hence } A^{-1} = \begin{pmatrix} & & \\ & & \\ & & \end{pmatrix}$$