

For $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$, $A^{-1} = \frac{1}{ad-bc} \begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$ when $ad - bc \neq 0$.

For each linear system, write in the form $AX = B$, find A^{-1} , then solve for $X = A^{-1}B$.

1) $\begin{cases} 3x - 7y = 3 \\ 5x + 2y = -2 \end{cases}$

2) $\begin{cases} 12x - 51y = 19 \\ 31x + 23y = 14 \end{cases}$

3) $\begin{cases} 6.1x + 2.3y = 360 \\ 4.8x - 1.4y = 201 \end{cases}$

$$\text{For } A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 5 & 7 \\ 1 & 1 & 1 \end{bmatrix}, A^{-1} = \begin{bmatrix} 2 & -1 & 1 \\ -5 & 2 & 1 \\ 3 & -1 & -1 \end{bmatrix}$$

Solve each linear system:

$$4) \begin{cases} x + 2y + 3z = 6 \\ 2x + 5y + 7z = 1 \\ x + y + z = -5 \end{cases}$$

$$5) \begin{cases} x + 2y + 3z = -10 \\ 2x + 5y + 7z = 21 \\ x + y + z = 7 \end{cases}$$