Kuta Software - Infinite Algebra 2   Name_____

Matrix Equations - Inverses Required

Date_____ Period____

Solve each equation.

1) $\begin{bmatrix} 4 & -2 \\ -7 & 2 \end{bmatrix} X = \begin{bmatrix} -6 \\ 12 \end{bmatrix}$

2) $\begin{bmatrix} -1 & 1 \\ 5 & -2 \end{bmatrix} C = \begin{bmatrix} 4 \\ -26 \end{bmatrix}$

3) $\begin{bmatrix} 2 & -3 \\ -5 & 5 \end{bmatrix} Z = \begin{bmatrix} -1 \\ 20 \end{bmatrix}$

4) $\begin{bmatrix} 1 & -9 \\ 1 & 0 \end{bmatrix} Z = \begin{bmatrix} -35 \\ -8 \end{bmatrix}$

5) $\begin{bmatrix} -1 & 2 \\ -6 & 10 \end{bmatrix} Z = \begin{bmatrix} 6 \\ 22 \end{bmatrix}$

6) $3X = \begin{bmatrix} 12 & -12 \\ 21 & -27 \end{bmatrix}$

7) $\begin{bmatrix} 25 & 13 \\ 13 & 9 \end{bmatrix} = \begin{bmatrix} 7 & -2 \\ 3 & -2 \end{bmatrix} X$

8) $\begin{bmatrix} 20 & -3 \\ 15 & -3 \end{bmatrix} = \begin{bmatrix} -6 & -5 \\ -5 & -4 \end{bmatrix} X$

Solve each equation or state if there is no unique solution.

9) $Y - \begin{bmatrix} -1 \\ -5 \\ 8 \\ 8 \end{bmatrix} = \begin{bmatrix} -6 \\ 6 \\ -16 \\ 0 \end{bmatrix}$

10) $\begin{bmatrix} -1 & -1 \\ -8 & 0 \end{bmatrix} X = \begin{bmatrix} -6 & 3 \\ -40 & -40 \end{bmatrix}$

11) $\begin{bmatrix} 0 & -4 \\ 0 & -1 \end{bmatrix} X = \begin{bmatrix} 28 & 0 & -20 \\ 7 & 0 & -5 \end{bmatrix}$

12) $\begin{bmatrix} 9 & -15 \\ -21 & 39 \end{bmatrix} = \begin{bmatrix} 2 & -3 \\ -7 & 9 \end{bmatrix} X$

13) $\begin{bmatrix} -1 & -2 \\ 2 & 9 \end{bmatrix} B = \begin{bmatrix} -3 & -5 & 13 \\ 21 & 0 & -36 \end{bmatrix}$

14) $\begin{bmatrix} -1 & -9 \\ 0 & -1 \end{bmatrix} C = \begin{bmatrix} 11 \\ 2 \end{bmatrix}$

Critical thinking questions:

15) Assuming that a solution exists, what are the dimensions of M?

$\begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix} M = \begin{bmatrix} -2 & 3 \\ 5 & -10 \\ 0 & 1 \end{bmatrix}$

16) Find one solution to:

$\begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} X = \begin{bmatrix} 3 & 5 \\ 0 & 0 \end{bmatrix}$

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$\begin{bmatrix} -2 \\ -1 \end{bmatrix}$

2) $\begin{bmatrix} -1 & 1 \\ 5 & -2 \end{bmatrix} C = \begin{bmatrix} 4 \\ -26 \end{bmatrix}$

$\begin{bmatrix} -6 \\ -2 \end{bmatrix}$

3) $\begin{bmatrix} 2 & -3 \\ -5 & 5 \end{bmatrix} Z = \begin{bmatrix} -1 \\ 20 \end{bmatrix}$

$\begin{bmatrix} -11 \\ -7 \end{bmatrix}$

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$\begin{bmatrix} -8 \\ 3 \end{bmatrix}$

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6) $3X = \begin{bmatrix} 12 & -12 \\ 21 & -27 \end{bmatrix}$

$\begin{bmatrix} 4 & -4 \\ 7 & -9 \end{bmatrix}$

7) $\begin{bmatrix} 25 & 13 \\ 13 & 9 \end{bmatrix} = \begin{bmatrix} 7 & -2 \\ 3 & -2 \end{bmatrix} X$

$\begin{bmatrix} 3 & 1 \\ -2 & -3 \end{bmatrix}$

8) $\begin{bmatrix} 20 & -3 \\ 15 & -3 \end{bmatrix} = \begin{bmatrix} -6 & -5 \\ -5 & -4 \end{bmatrix} X$

$\begin{bmatrix} 5 & 3 \\ -10 & -3 \end{bmatrix}$

Solve each equation or state if there is no unique solution.

9) $Y - \begin{bmatrix} -1 \\ -5 \\ 8 \\ 8 \end{bmatrix} = \begin{bmatrix} -6 \\ 6 \\ -16 \\ 0 \end{bmatrix}$

$\begin{bmatrix} -7 \\ 1 \\ -8 \\ 8 \end{bmatrix}$

10) $\begin{bmatrix} -1 & -1 \\ -8 & 0 \end{bmatrix} X = \begin{bmatrix} -6 & 3 \\ -40 & -40 \end{bmatrix}$

$\begin{bmatrix} 5 & 5 \\ 1 & -8 \end{bmatrix}$

11) $\begin{bmatrix} 0 & -4 \\ 0 & -1 \end{bmatrix} X = \begin{bmatrix} 28 & 0 & -20 \\ 7 & 0 & -5 \end{bmatrix}$

No unique solution

12) $\begin{bmatrix} 9 & -15 \\ -21 & 39 \end{bmatrix} = \begin{bmatrix} 2 & -3 \\ -7 & 9 \end{bmatrix} X$

$\begin{bmatrix} -6 & 6 \\ -7 & 9 \end{bmatrix}$

13) $\begin{bmatrix} -1 & -2 \\ 2 & 9 \end{bmatrix} B = \begin{bmatrix} -3 & -5 & 13 \\ 21 & 0 & -36 \end{bmatrix}$

$\begin{bmatrix} -3 & 9 & -9 \\ 3 & -2 & -2 \end{bmatrix}$

14) $\begin{bmatrix} -1 & -9 \\ 0 & -1 \end{bmatrix} C = \begin{bmatrix} 11 \\ 2 \end{bmatrix}$

$\begin{bmatrix} 7 \\ -2 \end{bmatrix}$

Critical thinking questions:

15) Assuming that a solution exists, what are the dimensions of M?

$\begin{bmatrix} 1 & 2 \\ 3 & 4 \\ 5 & 6 \end{bmatrix} M = \begin{bmatrix} -2 & 3 \\ 5 & -10 \\ 0 & 1 \end{bmatrix}$

2×2

16) Find one solution to:

$\begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix} X = \begin{bmatrix} 3 & 5 \\ 0 & 0 \end{bmatrix}$

Many answers. Ex: $\begin{bmatrix} 2 & 2 \\ 3 & 5 \end{bmatrix}$

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