Homework: Matrix Solutions to Linear Systems - Key

In Problems 1-4, write the augmented matrix for each system of linear equations.

1.

$$\begin{bmatrix} 4 & -1 & 1 & 3 \\ 5 & 2 & -7 & 1 \\ 3 & 1 & -2 & -3 \end{bmatrix}$$

2.

$$\begin{bmatrix} 3 & 1 & 8 & -2 \\ 0 & 3 & -5 & -5 \\ 0 & 0 & 3 & 9 \end{bmatrix}$$

3.

$$\begin{bmatrix} 7 & 2 & -1 & -8 \\ 3 & 0 & 5 & -1 \\ 4 & -3 & -1 & -11 \end{bmatrix}$$

4.

$$\begin{bmatrix} 5 & 2 & -4 & 1 & 8 \\ 2 & -1 & -3 & -4 & -1 \\ 8 & 4 & 1 & -1 & -5 \\ -4 & -1 & -1 & 2 & 3 \end{bmatrix}$$

In Problems 5-6, write the system of linear equations represented by the augmented matrix. Use x, y, and z, or if necessary, w, x, y, and z, for the variables.

5.

$$\begin{aligned} 2x - y &= -3 \\ 5x + 2y + z &= -7 \\ 7x - y - 2z &= 3 \end{aligned}$$

6.

$$\begin{aligned} 2w + x + 3z &= -4 \\ w - 5x + 2y &= 2 \\ x + 3y - 8z &= -5 \\ 2w - 3y - 4z &= -8 \end{aligned}$$

In Problems 7-11, solve each system of equations using matrices.

7.

(1, -2, 3)

8.

(2, -1, -2)

9.

(3, 1, -4)

10.

$$\left(\frac{-16}{21}, \frac{-20}{21}, \frac{-53}{21} \right)$$

11. $\left(\frac{2}{5},\frac{13}{5},2,\frac{1}{5}\right)$	