Mutivariable Linear Systems and Row Operations

Date_____ Period____

Write the augmented matrix for each system of linear equations.

1) $5x - 2y = -6$
$-x + 5y = 15$

2) $-3x - 4y = 20$
$3x - 5y = 25$

3) $x + 3y - 2z = -11$
$-2x - 5y + 3z = 17$
$4x - z = 1$

4) $-2x - 4y - 5z = 11$
$-x + 4z = -25$
$-3x - 5y + z = -25$

Write the system of linear equations for each augmented matrix.

5) $\left[\begin{array}{cc|c} 3 & 4 & 1 \\ -3 & 2 & 23 \end{array}\right]$

6) $\left[\begin{array}{cc|c} -5 & 1 & -16 \\ 1 & 5 & -2 \end{array}\right]$

7) $\left[\begin{array}{ccc|c} 3 & -1 & 1 & 8 \\ 0 & -1 & 2 & -10 \\ -2 & 2 & 2 & -8 \end{array}\right]$

8) $\left[\begin{array}{ccc|c} -5 & -4 & 3 & -8 \\ 1 & 0 & 4 & 0 \\ 3 & -5 & 5 & -10 \end{array}\right]$

Find the reduced row-echelon form for each system of linear equations.

9) $5x - 4y = -10$
$-x + y = 2$

10) $4x - 2y = 2$
$5x - 2y + z = 7$
$3x + 4y - z = 3$

11) $x - y + 2z = -1$
$-3x + 3y + 5z = 3$
$2x - 2y = -2$

12) $3x + 3y = -12$
$-4x - 2y + 2z = -14$
$x + 3y + 2z = 11$

Solve each system of linear equations using Gaussian or Gauss-Jordan elimination.

13) $-3x - 4y = -5$
$4x + 3y = 9$

14) $2x + 5y + z = -12$
$-x + 4y + 3z = -4$
$5x - 2z = -13$

15) $3x + 2y - 3z = 13$
$4x + 4z = 12$
$-2x - y + z = -8$

16) $-2x - 4y + 4z = 14$
$4x + 2y + 4z = -4$
$x + 2z = -2$

Mutivariable Linear Systems and Row Operations

Date_____ Period____

Write the augmented matrix for each system of linear equations.

1) $5x - 2y = -6$
$-x + 5y = 15$

$$\left[\begin{array}{cc|c} 5 & -2 & -6 \\ -1 & 5 & 15 \end{array}\right]$$

2) $-3x - 4y = 20$
$3x - 5y = 25$

$$\left[\begin{array}{cc|c} -3 & -4 & 20 \\ 3 & -5 & 25 \end{array}\right]$$

3) $x + 3y - 2z = -11$
$-2x - 5y + 3z = 17$
$4x - z = 1$

$$\left[\begin{array}{ccc|c} 1 & 3 & -2 & -11 \\ -2 & -5 & 3 & 17 \\ 4 & 0 & -1 & 1 \end{array}\right]$$

4) $-2x - 4y - 5z = 11$
$-x + 4z = -25$
$-3x - 5y + z = -25$

$$\left[\begin{array}{ccc|c} -2 & -4 & -5 & 11 \\ -1 & 0 & 4 & -25 \\ -3 & -5 & 1 & -25 \end{array}\right]$$

Write the system of linear equations for each augmented matrix.

5) $\left[\begin{array}{cc|c} 3 & 4 & 1 \\ -3 & 2 & 23 \end{array}\right]$

$3x + 4y = 1$
$-3x + 2y = 23$

6) $\left[\begin{array}{cc|c} -5 & 1 & -16 \\ 1 & 5 & -2 \end{array}\right]$

$-5x + y = -16$
$x + 5y = -2$

7) $\left[\begin{array}{ccc|c} 3 & -1 & 1 & 8 \\ 0 & -1 & 2 & -10 \\ -2 & 2 & 2 & -8 \end{array}\right]$

$3x - y + z = 8$
$-y + 2z = -10$
$-2x + 2y + 2z = -8$

8) $\left[\begin{array}{ccc|c} -5 & -4 & 3 & -8 \\ 1 & 0 & 4 & 0 \\ 3 & -5 & 5 & -10 \end{array}\right]$

$-5x - 4y + 3z = -8$
$x + 4z = 0$
$3x - 5y + 5z = -10$

Find the reduced row-echelon form for each system of linear equations.

9) $5x - 4y = -10$
$-x + y = 2$

$$\left[\begin{array}{cc|c} 1 & 0 & -2 \\ 0 & 1 & 0 \end{array}\right]$$

10) $4x - 2y = 2$
$5x - 2y + z = 7$
$3x + 4y - z = 3$

$$\left[\begin{array}{ccc|c} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 4 \end{array}\right]$$

11) $x - y + 2z = -1$
$-3x + 3y + 5z = 3$
$2x - 2y = -2$

$$\left[\begin{array}{ccc|c} 1 & -1 & 0 & -1 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 \end{array}\right]$$

12) $3x + 3y = -12$
$-4x - 2y + 2z = -14$
$x + 3y + 2z = 11$

$$\left[\begin{array}{ccc|c} 1 & 0 & -1 & 0 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{array}\right]$$

Solve each system of linear equations using Gaussian or Gauss-Jordan elimination.

13) $-3x - 4y = -5$
$4x + 3y = 9$

$(3, -1)$

14) $2x + 5y + z = -12$
$-x + 4y + 3z = -4$
$5x - 2z = -13$

$(-3, -1, -1)$

15) $3x + 2y - 3z = 13$
$4x + 4z = 12$
$-2x - y + z = -8$

$(-z + 3, 3z + 2, z)$

16) $-2x - 4y + 4z = 14$
$4x + 2y + 4z = -4$
$x + 2z = -2$

No solution.