

## Multivariable Linear Systems and Row Operations

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