

Matrix Solutions to Linear Systems

1. Write the augmented matrix for each system of linear equations

$$9x - 3y + 4z = 15$$

$$x + 2y - z = -23$$

$$-3x - y + z = 18$$

2. Write the augmented matrix for each system of linear equations

$$x - 4y + 2z = 3$$

$$5x + y = 7$$

$$9x - 3z = 1$$

3. 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

$$\left[\begin{array}{ccc|c} 2 & 0 & 3 & 7 \\ 0 & 2 & -4 & 5 \\ 3 & 4 & 0 & -1 \end{array} \right]$$

4. Do the indicated row operation

$$\left[\begin{array}{ccc|c} 5 & -20 & -10 & 2 \\ 7 & -1 & -3 & 4 \\ 2 & 8 & 2 & -2 \end{array} \right], \frac{1}{5}R_1$$

5. Do the indicated row operation

$$\left[\begin{array}{ccc|c} 4 & -2 & 3 & 1 \\ 5 & -1 & -2 & 9 \\ 1 & 2 & 7 & -3 \end{array} \right], -2R_1 + R_2$$

6. Solve each system of equations using matrices. Use Gaussian elimination with back-substitution or Gauss-Jordan elimination

$$x - 5z = -4$$

$$3x + 4y - 2z = 9$$

$$2x - 4y + 3z = -3$$

7. Solve each system of equations using matrices. Use Gaussian elimination with back-substitution or Gauss-Jordan elimination

$$w + x - 2y + 3z = 16$$

$$3w - x - y + 5z = 18$$

$$w + 2x - 3y - 4z = -9$$

$$w - 5x - y - 2z = -12$$