Solve the system using the substitution method.

1. \( x + 2y = 6 \)
   \( 3x - 2y = 2 \)

2. \( x + 3y = 3 \)
   \( 2x - 4y = 6 \)

3. \( 4x + y = 7 \)
   \( 2x + 5y = -1 \)

4. \( 2x - 3y = 3 \)
   \( -2x + y = -4 \)

5. \( 3x + 2y = -2 \)
   \( 6x - y = 6 \)

6. \( 8x + 2y = 2 \)
   \( x + 3y = 14 \)

Solve the system using the elimination method.

7. \( -3x + 3y = 3 \)
   \( 3x + y = 9 \)

8. \( 5x - y = -9 \)
   \( 2x + y = 2 \)

9. \( -5x + 12y = 20 \)
   \( x - 2y = -6 \)

10. \( 4x - 2y = -2 \)
    \( 6x + y = 5 \)

11. \( 3x + 2y = 1 \)
    \( 4x + 6y = 7 \)

12. \( 7x - 3y = 6 \)
    \( -2x + 5y = -10 \)

Solve the system using any algebraic method.

13. \( 5x + 7y = -2 \)
    \( 2x - 7y = 9 \)

14. \( x + 3y = 1 \)
    \( 3x + 7y = 1 \)

15. \( 4x + 6y = 8 \)
    \( 2x + 3y = 3 \)

16. \( 8x - 5y = -17 \)
    \( -2x + y = 6 \)

17. \( 3x - 8y = 0 \)
    \( -2x + 5y = -2 \)

18. \( 4x - 6y = 2 \)
    \( 5x + 3y = 1 \)

19. \( 2x - 5y = 3 \)
    \( -4x + 10y = -6 \)

20. \( 8x + 3y = 10 \)
    \( -6x + y = -12 \)

21. \( 5x + 4y = -18 \)
    \( 2x + 3y = -24 \)

22. CD and Cassette Sales From 1990 to 1998, the manufacturer’s shipments for audio cassettes \( A \) (in millions) and compact discs \( C \) (in millions) can be modeled by the equations

\[
A = -31.8t + 322 \quad \text{Audio cassette shipments}
\]

\[
C = 42.8t + 110 \quad \text{Compact disc shipments}
\]

where \( t \) is the number of years since 1990. During what year did the number of compact discs shipped surpass the number of audio cassettes shipped?

23. Hair Salon A hair salon receives a shipment of 84 bottles of hair conditioner to use and sell to customers. The two types of conditioners received are type A, which is used for regular hair, and type B, which is used for dry hair. Type A costs $6.50 per bottle and type B costs $8.25 per bottle. The hair salon’s invoice for the conditioner is $588. How many of each type of conditioner are in the shipment?

24. Birthday Gift You and your sister decide to combine your weekly overtime earnings to buy a birthday gift for your mother. Your overtime rate is $18 per hour and your sister’s overtime rate is $24 per hour. The total amount earned for the gift was $288. If you worked two more hours of overtime than your sister, how many overtime hours did each of you work?
Tell whether the given ordered triple is a solution of the system.

1. \((2, 1, 3)\)
   
   \[
   \begin{align*}
   2x - y + 5z &= 18 \\
   x - 3y + 2z &= 5 \\
   x + 2y + z &= 7
   \end{align*}
   \]

2. \((5, -2, 2)\)
   
   \[
   \begin{align*}
   2x - y + z &= 5 \\
   x + 2y - z &= 1 \\
   -2x + y - 3z &= -15
   \end{align*}
   \]

3. \((3, 3, 4)\)
   
   \[
   \begin{align*}
   x + 2y - 2z &= 1 \\
   7x - 4y + z &= 11 \\
   2x - 3y + 2z &= 5
   \end{align*}
   \]

4. \((1, -1, 3)\)
   
   \[
   \begin{align*}
   4x + 2y + 3z &= 11 \\
   x - 2y + z &= 6 \\
   2x + y + 2z &= 7
   \end{align*}
   \]

5. \((0, 0, 2)\)
   
   \[
   \begin{align*}
   2x - 4y - 2z &= -4 \\
   2x + 5y + 8z &= 16 \\
   6x - 3y - z &= 2
   \end{align*}
   \]

6. \((5, -2, 3)\)
   
   \[
   \begin{align*}
   3x + 4y - 2z &= 1 \\
   2x + 3y - z &= 1 \\
   4x + 8y - z &= 1
   \end{align*}
   \]

Solve the system using any algebraic method.

7. \[
   \begin{align*}
   x + y - 5z &= -5 \\
   y - 2x &= 14 \\
   4y - 2z &= 8
   \end{align*}
   \]

8. \[
   \begin{align*}
   x - y - z &= 5 \\
   2y + 3z &= 14 \\
   -3y + 2z &= 5
   \end{align*}
   \]

9. \[
   \begin{align*}
   -3x + y - z &= -2 \\
   2x - y - 2z &= -12 \\
   4x + 2y + z &= 1
   \end{align*}
   \]

10. \[
    \begin{align*}
    x - 2y + z &= -1 \\
    x + 2y - z &= 7 \\
    x + y + z &= 2
    \end{align*}
    \]

11. \[
    \begin{align*}
    x - 2y + 4z &= -19 \\
    2x + y - 3z &= 14 \\
    3x + y + 2z &= 5
    \end{align*}
    \]

12. \[
    \begin{align*}
    x - 2y - 3z &= -7 \\
    4x + 5y - 2z &= -7 \\
    -2x + y + z &= -7
    \end{align*}
    \]

13. \[
    \begin{align*}
    8x - 2y + z &= -6 \\
    -x + 3y - 2z &= -15 \\
    3x - y + 4z &= 13
    \end{align*}
    \]

14. \[
    \begin{align*}
    2x + 2y + z &= -5 \\
    2x + y + 3z &= 7 \\
    -4x - 2y - 6z &= -14
    \end{align*}
    \]

15. \[
    \begin{align*}
    3x - 4y - 4z &= 8 \\
    4x + 2y - 2z &= 11 \\
    -5x + 8y + 3z &= -9
    \end{align*}
    \]

16. **Harvest Yields** A farmer makes three deliveries to the feed mill during one harvest. The harvest produced 2885 bushels of corn, 1335 bushels of wheat, and 1230 bushels of soybeans. Use the table to write and solve a system of equations to find the total number of bushels in each delivery.

<table>
<thead>
<tr>
<th>Crop</th>
<th>1st Delivery</th>
<th>2nd Delivery</th>
<th>3rd Delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corn</td>
<td>50%</td>
<td>75%</td>
<td>40%</td>
</tr>
<tr>
<td>Wheat</td>
<td>30%</td>
<td>10%</td>
<td>30%</td>
</tr>
<tr>
<td>Soybeans</td>
<td>20%</td>
<td>15%</td>
<td>30%</td>
</tr>
</tbody>
</table>

17. **Harvest Earnings** The feed mill pays a farmer $6930.00 for the 1st delivery, $5475.00 for the 2nd delivery, and $8879.50 for the 3rd delivery. The table shows the number of bushels included in each delivery. Use the table to write and solve a system of equations to find the price per bushel that the farmer received for each crop.

<table>
<thead>
<tr>
<th>Delivery</th>
<th>Corn</th>
<th>Wheat</th>
<th>Soybeans</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Delivery</td>
<td>900</td>
<td>540</td>
<td>360</td>
</tr>
<tr>
<td>2nd Delivery</td>
<td>1125</td>
<td>150</td>
<td>225</td>
</tr>
<tr>
<td>3rd Delivery</td>
<td>860</td>
<td>645</td>
<td>645</td>
</tr>
</tbody>
</table>