Decide whether the given ordered triple is a solution of the system.

1. (1, 1, 1)
   \[ x + y + z = 3 \]
   \[ 2x - y + 4z = 5 \]
   \[ x + 4y - 2z = 3 \]

2. (0, 3, 1)
   \[ x + 2y + z = 7 \]
   \[ 4x - y + 3z = 0 \]
   \[ -2x + y - 5z = -2 \]

3. (2, 1, 6)
   \[ x + y - z = -3 \]
   \[ 2x - y + z = 9 \]
   \[ 4x + y - z = 15 \]

Solve the system using the substitution method.

4. \[ x - 2y + 3z = -4 \]
   \[ y - z = 3 \]
   \[ z = -1 \]

5. \[ x + 3y = 1 \]
   \[ y + 2z = 5 \]
   \[ z = 3 \]

6. \[ x + 5y - 7z = 6 \]
   \[ y - 3z = 7 \]
   \[ z = 4 \]

7. \[ x + 2y + z = 1 \]
   \[ y - z = 2 \]
   \[ 4z = 8 \]

8. \[ 4x - y + 2z = 6 \]
   \[ y + 4z = 2 \]
   \[ 2y = 4 \]

9. \[ x + 2y - z = 3 \]
   \[ x + 2y = 5 \]
   \[ x = -1 \]

Solve the system using the linear combination method.

10. \[ x + y + z = 5 \]
    \[ 2x - y + z = 4 \]
    \[ 3x - y + 2z = 8 \]

11. \[ x + 2y - 3z = -8 \]
    \[ 2x + y + 3z = 17 \]
    \[ x - 3y + 3z = 11 \]

12. \[ 2x + y - z = -7 \]
    \[ -2x - y + 3z = 17 \]
    \[ 2x + 3y - 2z = -12 \]

13. \[ x + 2y - 4z = 2 \]
    \[ -x + 2y - 4z = -2 \]
    \[ -x - 2y + 4z = -2 \]

14. \[ 2x + 3y - z = 4 \]
    \[ 4x + 6y - 2z = 6 \]
    \[ -2x + y + z = -2 \]

15. \[ x + y + z = 6 \]
    \[ x + y - z = 0 \]
    \[ x - y + z = 4 \]

Pool Admission  In Exercises 16 and 17, use the following information.

A public swimming pool has the following rates: ages under 5 are free, ages 5–16 are $3, and ages 16 and up are $4. The pool also has a policy that every child under age 5 must be accompanied by an adult. The families in your neighborhood decide to go to the pool as part of a summer party. There are 22 people in your group and an equal number of children under age 5 as people 16 years old and older. The total admission cost was $54. Use the model below.

\[
\begin{align*}
\text{Number of people under age 5} & \quad \text{+ Number of people ages 5–16} & \quad \text{+ Number of people ages 16 and up} & = & \quad \text{Total number of people} \\
\text{Rate for under age 5} \cdot \text{Number of people under age 5} & \quad \text{+ Rate for ages 5–16} \cdot \text{Number of people ages 5–16} & \quad + \text{Rate for ages 16 and over} \cdot \text{Number of people ages 16 and over} & = & \quad \text{Total cost} \\
\text{Number of people under age 5} & = & \quad \text{Number of people ages 16 and over}
\end{align*}
\]

16. Write a system of linear equations in three variables to find the number of people in each age category in your group.

17. How many people in your group are in the different age categories designated by the pool?