2.1 Practice A

In Exercises 1 and 2, determine whether the ordered triple is a solution of the system. Justify your answer.

1. \((3, 1, -4)\)
   \[
   \begin{align*}
   x - 4y + 2z &= -9 \\
   5x + 2y + z &= 13 \\
   -2x + 3y - 3z &= 9
   \end{align*}
   \]

2. \((-3, 6, -7)\)
   \[
   \begin{align*}
   2x + 3y + 3z &= -9 \\
   -x + 4y - 2z &= 10 \\
   x - 2y - z &= -8
   \end{align*}
   \]

In Exercises 3–8, solve the system by substitution.

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

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

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

6. \(3x + 3y + 3z = 18\)
   \[
   \begin{align*}
   x + 4y + z &= 0 \\
   2x + 5y - z &= -9
   \end{align*}
   \]

7. \(2x + 3y = z\)
   \[
   \begin{align*}
   -x + 2z &= 9 \\
   x + 5y + 3z &= 4
   \end{align*}
   \]

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

9. A movie theater advertises that a family of two adults, one student, and one child between the ages of 3 and 8 can attend a movie for $15. An adult ticket costs as much as the combined cost of a student ticket and a child ticket. You purchase 1 adult ticket, 4 student tickets, and 2 child tickets for $23. What is the price per ticket for each type of ticket?

10. A triangle has a perimeter of 90 centimeters.
   
   a. Write and use a linear system to determine the lengths of sides \(\ell, m,\) and \(n.\)

   b. Is the triangle a right triangle? Explain.
2.1 Practice B

In Exercises 1–8, solve the system by substitution.

1. \[2x - y = 6\]
   \[4x - 3y - 2z = 14\]
   \[-x + 2y - 3z = 12\]

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

3. \[3x - 2y + z = 5\]
   \[-x - 5y + 8z = -16\]
   \[-2x + 2y + 5z = 5\]

4. \[-x + 2y - 5z = -17\]
   \[x + y + z = -6\]
   \[3x - y - z = -6\]

5. \[x - 7y - 2z = 21\]
   \[-4x + 9y - 5z = 6\]
   \[6x - 5y + z = 0\]

6. \[-x + 4y - z = 16\]
   \[2x + 5y + 3z = 1\]
   \[-3x - 3y + 2z = -27\]

7. \[9x - 18y + 9z = -27\]
   \[3x - 6y + 4z = -9\]
   \[x - 2y + z = -3\]

8. \[6x + 3y - 9z = 10\]
   \[-2x - y + 3z = 3\]
   \[x - 2y - z = 1\]

9. Your friend claims that she has a bag of 30 coins containing nickels, dimes, and quarters. The total value of the 30 coins is $3. There are twice as many nickels as there are dimes. Is your friend correct? Explain your reasoning.

10. Each equation in this system represents a line.
    \[x - 2y - 3 = 0\]
    \[2x + y + 1 = 0\]
    \[3x + 4y + 5 = 0\]

    a. Solve the system of linear equations by substitution.
    
    b. Do the lines intersect at a point? Explain.