Accelerated 65-96 HW 3 (B 4.3) Systems of Equations Addition

**Supplemental Questions:**

1. When solving a system of equations using the addition method, you know there are _____ when, after adding the equations, you end up with an untrue statement such as $5 = -3$, $4 = 6$, or $-2 = 0$. In this instance, the correct set notation to use is _____.

2. When solving a system of equations using the addition method, you know there are _____ when, after adding the equations, you end up with the true statement $0 = 0$. Supposing the system of equations in question is

$$\begin{aligned} 3x - 4y &= 9 \\ -6x + 8y &= -18 \end{aligned}$$

the correct set notation to use is _____.

**Practice Exercises:**

In exercises 1 - 61, solve each system by the addition method. If there is no solution or an infinite number of solutions, so state. Use set notation to express solution sets.

1. $$\begin{aligned} x + y &= -3 \\ x - y &= 11 \end{aligned}$$

3. $$\begin{aligned} 2x + 3y &= 6 \\ 2x - 3y &= 6 \end{aligned}$$

7.
$$\begin{aligned} 5x - y &= 14 \\ -5x + 2y &= -13 \end{aligned}$$

11.
$$\begin{aligned} x + 3y &= 4 \\ 4x + 5y &= 2 \end{aligned}$$

17.
$$\begin{aligned} 3x - 4y &= 11 \\ 2x + 3y &= -4 \end{aligned}$$

21.
$$\begin{aligned} 3x &= 2y + 7 \\ 5x &= 2y + 13 \end{aligned}$$

25.
$$\begin{aligned} 2x - y &= 3 \\ 4x + 4y &= -1 \end{aligned}$$

29.
$$\begin{aligned} 3x - y &= 1 \\ 3x - y &= 2 \end{aligned}$$

37.
$$\begin{aligned} x &= 5 - 3y \\ 2x + 6y &= 10 \end{aligned}$$

39.
$$\begin{aligned} 4(3x - y) &= 0 \\ 3(x + 3) &= 10y \end{aligned}$$

59. If four times a first number is decreased by three times a second number, the result is 0. The sum of the numbers is -7. Find the numbers.

61. $$\frac{3x}{5} + \frac{4y}{5} = 1$$
$$\frac{x}{4} - \frac{3y}{8} = -1$$

**Applications:**

69. Late in a semester, procrastinating students reported more symptoms of physical illness than their nonprocrastinating peers. The data can be modeled by the following system of equations:

$$-0.45x + y = 0.8 \quad (1)$$
$$-0.15x + y = 2.6. \quad (2)$$

The first equation models the average number of symptoms for procrastinators, $y$, after $x$ weeks. The second equation models the average number of symptoms for nonprocrastinators, $y$, after $x$ weeks.

Use the addition method to determine by which week in the semester both groups report the same number of symptoms of physical illness. For that week, how many symptoms were reported by each group? How is this shown in Figure 4.9 on page 317?