3.4 Substitution Method

Create a system of equations for each problem, but don’t solve. Identify each variable’s meaning.

1. The perimeter of a rectangular field is 628 meters.
   The length of the field exceeds its width by 6 meters.

   \[ \text{(variable)} = \text{(what the variable represents)} \]

   \[ \text{(variable)} = \text{(what the variable represents)} \]

   Equation 1: ___________________________

   Equation 2: ___________________________

2. A plane traveled 644 miles to Jacksonville. The trip there was with the wind and it took 7 hours to get there. The trip back was into the wind and it took 14 hours.

   \[ \text{(variable)} = \text{(what the variable represents)} \]

   \[ \text{(variable)} = \text{(what the variable represents)} \]

   Equation 1: ___________________________

   Equation 2: ___________________________

Solve each system of equations using substitution.

3. \[ \begin{align*}
    x - 3y &= 3 \\
    -x - 4y &= 4
    \end{align*} \]

4. \[ \begin{align*}
    2x - 3y &= -10 \\
    x - y &= -3
    \end{align*} \]

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

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

7. \[ \begin{align*}
    x - 2y &= -1 \\
    -2x + 4y &= 2
    \end{align*} \]

8. \[ \begin{align*}
    -3x + y &= 5 \\
    2x - 3y &= -1
    \end{align*} \]
9. \[
\begin{align*}
4x - y &= -10 \\
6x + 2y &= -1
\end{align*}
\]

10. \[
\begin{align*}
3x + 2y &= 6 \\
-3x + y &= 3
\end{align*}
\]

Answers to 3.4 CA #2

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>(l = ) length of the field (w = ) width of the field</td>
<td>2.</td>
<td>(p = ) speed of the plane (w = ) speed of the wind</td>
<td>3.</td>
</tr>
<tr>
<td></td>
<td>(2l + 2w = 628) (l = w + 6)</td>
<td></td>
<td>(644 = (p + w)7) (644 = (p - w)14)</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>No Solution</td>
<td>7.</td>
<td>Infinite Solutions</td>
<td>8.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>9.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.</td>
</tr>
</tbody>
</table>