

3.2 Solving Linear Systems by Substitution or Elimination

Homework §3.2 #7-53 all odd.

The Substitution Method

The way we are going to explain the *substitution method* is by just going ahead and solving a problem.

Example 1. Solve the system using the substitution method.

$$\begin{aligned}x + y &= 4 \\x - y &= 1\end{aligned}$$

Example 2. Solve the system using the substitution method.

$$\begin{aligned}2x + y &= 6 \\3x + 4y &= 4\end{aligned}$$

Example 3. Solve the system using the substitution method.

$$y = -3x + 5$$

$$y = -3x - 2$$

The Elimination Method

Here is another way to solve linear systems. Let's jump in with some examples.

Example 4. Solve the system by the elimination method.

$$\begin{array}{rcl} 2x & - & 3y = 0 \\ -4x & + & 3y = -1 \end{array}$$

Example 5. Solve the system by the elimination method.

$$\begin{array}{rcl} 5x & + & 4y = 22 \\ -3x & + & 8y = 18 \end{array}$$

Example 6. Solve the system by the elimination method.

$$\begin{aligned}2x + 3y &= 17 \\5x + 7y &= 29\end{aligned}$$

Example 7. Solve the system by the elimination method.

$$\begin{aligned}3x - 2y &= 6 \\-12x + 8y &= -24\end{aligned}$$

Example 8. Solve the system by the elimination method. Clear the fractions before solving.

$$\begin{aligned} 0.2x + 0.3y &= 1.7 \\ \frac{1}{7}x + \frac{1}{5}y &= \frac{29}{35} \end{aligned}$$