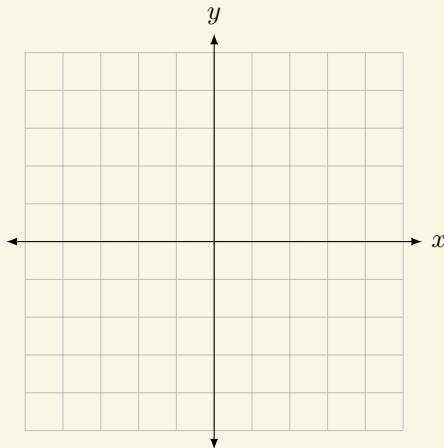## 15.1 The Method of Substitution - Worksheet 1

1

Graph the lines and describe their configuration.

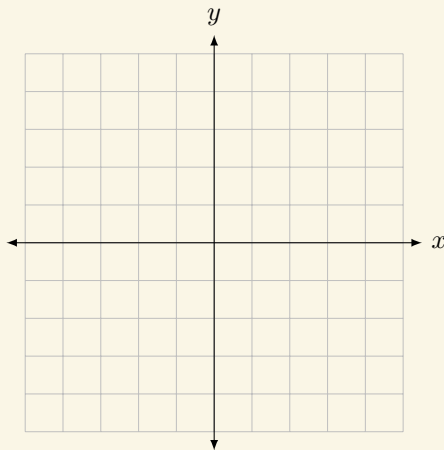$$\begin{cases} y = \frac{3}{2}x + 1 \\ y = x + 2 \end{cases}$$

The configuration is whether the lines are parallel, overlapping, or intersecting at a single point.

2

Graph the lines and describe their configuration.

$$\begin{cases} y = \frac{1}{3}x + 1 \\ y = \frac{1}{3}x - 3 \end{cases}$$

3

Determine whether $(-2, -1)$ is a solution of the system of equations.

$$\begin{cases} 2x + y = -5 \\ x - 3y = -1 \end{cases}$$

15.2 The Method of Substitution - Worksheet 2

1
Describe the configuration of the following system of equations. If they intersect at a single point, determine the coordinates of that point.

$$\begin{cases} y = 3x + 3 \\ y = 2x - 1 \end{cases}$$

Think about how you might present your work in an organized manner. It's okay to use some words to describe different parts of the calculation.

2
Describe the configuration of the following system of equations. If they intersect at a single point, determine the coordinates of that point.

$$\begin{cases} y = -2x + 5 \\ y = x - 1 \end{cases}$$

3
Describe the configuration of the following system of equations. If they intersect at a single point, determine the coordinates of that point.

$$\begin{cases} y = 3x + 1 \\ y = -x - 2 \end{cases}$$

15.3   The Method of Substitution - Worksheet 3

1   Describe the configuration of the following system of equations. If they intersect at a single point, determine the coordinates of that point.

$$\begin{cases} x + y = 6 \\ x - y = 2 \end{cases}$$

2   Describe the configuration of the following system of equations. If they intersect at a single point, determine the coordinates of that point.

$$\begin{cases} 3x - 2y = 4 \\ -6x + 4y = -8 \end{cases}$$

3   Describe the configuration of the following system of equations. If they intersect at a single point, determine the coordinates of that point.

$$\begin{cases} 2x + y = 3 \\ 4x + 2y = -3 \end{cases}$$

15.4 The Method of Substitution - Worksheet 4

1 Describe the configuration of the following system of equations. If they intersect at a single point, determine the coordinates of that point.

$$\begin{cases} 2x - y = 7 \\ -x + 3y = -1 \end{cases}$$

Sometimes, you can plan ahead and make your substitutions less difficult by avoiding fractions.

2 Describe the configuration of the following system of equations. If they intersect at a single point, determine the coordinates of that point.

$$\begin{cases} x + 3y = 0 \\ 2x + 5y = -1 \end{cases}$$

3 Describe the configuration of the following system of equations. If they intersect at a single point, determine the coordinates of that point.

$$\begin{cases} 3x - 4y = -6 \\ -4x + 2y = -5 \end{cases}$$

15.5   The Method of Substitution - Worksheet 5

1

Suppose that $m_1 \neq m_2$. Then the following system of equations intersect at a single point. Determine the coordinates of that point.

b_1 and b_2 are constants.

$$\begin{cases} y = m_1 x + b_1 \\ y = m_2 x + b_2 \end{cases}$$

2

Suppose that the following system of equations intersect at a single point. Determine the coordinates of that point.

$$\begin{cases} ax + by = e \\ cx + dy = f \end{cases}$$

To guarantee they intersect at a single point, you need $ad - bc \neq 0$. You should find that expression or its negative appear somewhere in your calculation.