5.3

SOLVING SYSTEMS OF LINEAR EQUATIONS BY ELIMINATION

5-3 Solve Linear Systems by Adding

So far, you've learned two methods to solve a linear system:

1) graphing
2) substitution

Today, you'll learn a third method where your goal is to ELIMINATE one of the variables by either adding or subtracting the two equations.

Example 1

$$3x + 4y = 8$$
$$-3x + 5y = 10$$

Example 2

$$-5x + y = 18$$
$$3x - y = -10$$

Now you try...

1) $3x - 4y = 6$
$2x + 4y = 9$

2) $-2x + y = -5$
$3x - y = 4$

5-3 Solve Linear Systems by Subtracting

Yesterday you learned a third method where your goal is to ELIMINATE one of the variables by looking for OPPOSITES and then adding the two equations together.

Use SUBTRACTION when there are the *exact same terms* (including coefficients) in each equation.

Example 1

$$5x + 6y = 4$$
$$7x + 6y = 8$$

Example 2

$$4x + 2y = 14$$
$$4x - 3y = -11$$

Now you try...

1) $2x + y = 7$
$x + y = 1$

2) $2x + y = 3$
$2x + 3y = 13$

Can you make a variable cancel by first multiplying?

Example 1

$$-2x + 4y = -8$$
$$x - y = 4$$

Example 2

$$2x + y = -9$$
$$4x + 11y = 9$$

Example 3

$$x + 3y = 1$$
$$5x + 6y = 14$$

Now you try...

1) $4x - y = 2$
$3x + 2y = 7$

2) $3x - y = 10$
$2x + 5y = 35$