Examples from students' research on solving system:

1. This student received 3 points for this part of their research.
Substitution is one way to solve systems of equations. You usually use the substitution method when you have two or more systems with two or more variables in the equation. What you want to do is decide which variable you would like to solve for first. For example, you have variables, *x* and *y*, and there are two systems with both variables in them. Let's solve for *x* first, choose one of the systems and put it in standard form, with the rest of the equation equal to *y*. Then, you take what *y* equals and substitute it into the other system for the *y* variable. This leaves you with just *x's* in the second system. Solve for *x*, then you put the value of *x* into the previous system and solve for *y*. Then, put the values into parentheses, to form an ordered pair.

$$y=2x+4$$

$$3x+y=9$$

$$3x+(2x+4)=9$$

$$5x+4=9$$

$$5x=5$$

$$x=1$$

$$y=2x+4$$

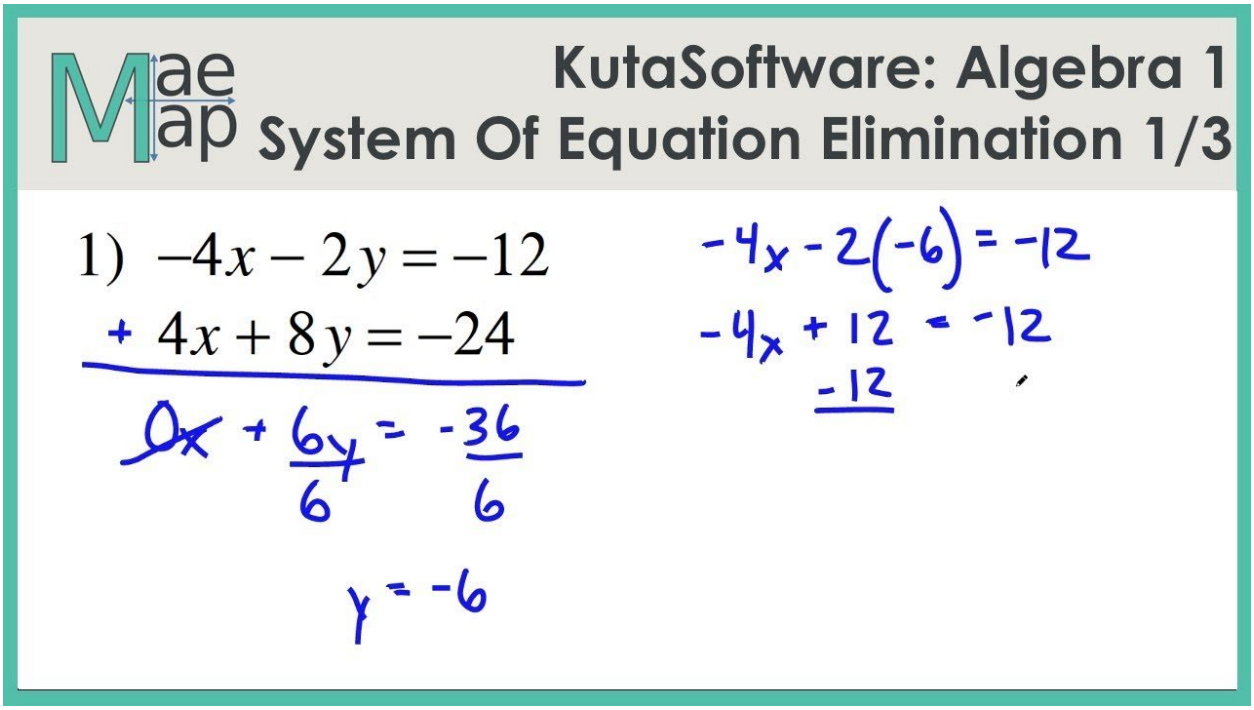
$$y=2\cdot 1+4$$

$$y=2\cdot 1+4$$

$$y=6$$

The solution of the linear system is (1, 6).

2 This student received 2 points for this part of their research. The example is not completed correctly.
One way to solve systems is by using the elimination method. First you put all equations in standard form alphabetically. Then you multiply one of the equations and add them together in order to eliminate one of the variables, leaving only one variable and a constant term. Then you divide to get your variable by itself giving you the answer. Finally you plug in your answer for the variable in the other equation and solve for the other variable.



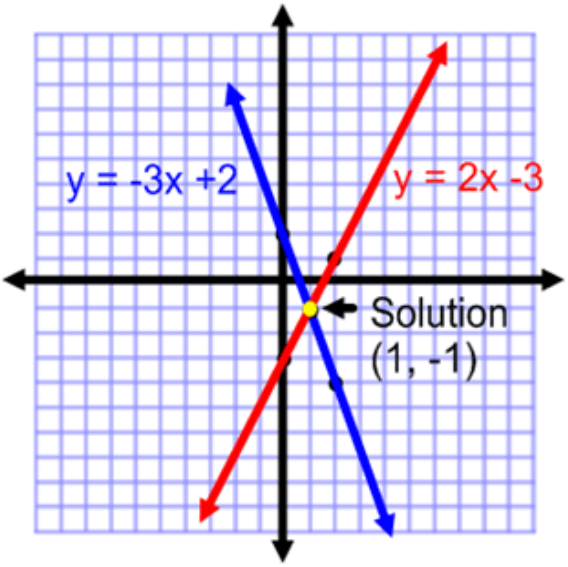
3. This student received 3 points for this part of their research.

One way to solve systems is by graphing. To graph a system, you need to first get the equation in slope-intercept form. Slope-intercept form is when y is by itself on one side of the equation and all x-values and the constant term is on the other side of the equation. If it is linear, when x is to the power of 1, you graph the y-intercept (constant term) and then plot points using the slope, numbers in front of the x-value. Do it for both equations. Wherever the lines intersect is the solution for the system.

Example:

$y = -3x + 2$
$y = 2x - 3$

Step 1: Graph each equation.



Step 2: Find the point of intersection. This is your solution.

The solution to this system of equations is (1, -1).