Alg1

March 6, 2012

Get out BLUE WS7

5) $-3x-2y=15$

$x+3y=-19$

$-3y \quad -3y$

$x=-3y-19$

$-3(-3y-19)-2y=15$

$9y+57-2y=15$

$7y+57=15$

$-57 \quad -57$

$\frac{7y}{7}=\frac{-42}{7}$ $\quad y=-6$

$x=-3(-6)-19$

$=18-19$

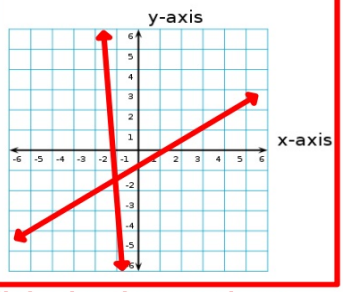
$=-1$

$(-1,-6)$

3/6 - Solving Systems using Elimination

What if you can't solve one equation for one variable without getting fractions?

Intersecting



This is the only type today.

We need a new method...

$$
\begin{array}{rl}
 & 5x - 4y = 20 \\
+ & -2x + 4y = 4 \\
\hline
 & 3x = 24
\end{array}
$$

$$\frac{3x}{3} = \frac{24}{3}$$

$$x = 8$$

$$5x - 4y = 20$$

$$5(8) - 4y = 20$$

$$40 - 4y = 20$$

$$-40 \qquad -40$$

$$\frac{-4y}{-4} = \frac{-20}{-4}$$

$$y = 5$$

$$(8, 5)$$

$$-2\cancel{x} - 4y = -12$$
$$+\ \cancel{2x} - 3y = -2$$

$$\frac{-7y}{-7} = \frac{-14}{-7}$$

$$y = 2$$

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

$$2x - 3(2) = -2$$

$$2x - 6 = -2$$
$$+6 \qquad +6$$

$$\frac{2x}{2} = \frac{4}{2}$$

$$x = 2$$

Steps:

1. ...
2. Add equations
3. Solve for the variable
4. Substitute into an equation with both variables
5. Solve for the variable
6. What's the point?

$(2, 2)$

$$-3x + 6y = -30$$
$$+ \quad +3x + 5y = -3$$

$$\frac{11y}{11} = \frac{-33}{11}$$

$$y = -3$$

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

$$3x + 5(-3) = -3$$

$$3x - 15 = -3$$
$$+15 \quad +15$$

$$\frac{3x}{3} = \frac{12}{3}$$

$$x = 4$$

Steps:

1. Change the signs of one equation to make the coefficients on one variable opposites.
2. Add equations
3. Solve for the variable
4. Substitute into an equation with both variables
5. Solve for the variable
6. What's the point?

$(4, -3)$

$$9x + 6y = 3$$
$$+ \quad -8x + 6y = 4$$
$$x = -1$$

$$9x + 6y = 3$$
$$9(-1) + 6y = 3$$
$$-9 + 6y = 3$$
$$+9 \qquad +9$$
$$\frac{6y}{6} = \frac{12}{6}$$
$$y = 2$$

Steps:

1. Change the signs of one equation to make the coefficients on one variable opposites.
2. Add equations
3. Solve for the variable
4. Substitute into an equation with both variables
5. Solve for the variable
6. What's the point?

$(-1, 2)$

$$-2\cdot(4x-5y=4)$$

$$6x-10y=-4$$

$$-8x+\cancel{10y}=-8$$

$$+\quad 6x-\cancel{10y}=-4$$

$$\frac{-2x}{-2}=\frac{-12}{-2}$$

$$x=6$$

$$4(6)-5y=4$$

$$24-5y=4$$

$$-24 \qquad -24$$

$$\frac{-5y}{-5}=\frac{-20}{-5}$$

$$y=4$$

Steps:

1. Multiply one equation by whatever it takes to make the coefficients on one variable opposites.
2. Add equations
3. Solve for the variable
4. Substitute into an equation with both variables
5. Solve for the variable
6. What's the point?

$$(6,4)$$

4. $\begin{cases} -2x + 2y = 2 \\ 8x + 9y = 9 \end{cases}$

$$\begin{array}{r} -\cancel{8x} + 8y = 8 \\ + \quad \cancel{8x} + 9y = 9 \\ \hline 17y = 17 \end{array}$$

$$\frac{17y}{17} = \frac{17}{17}$$

$$y = 1$$

$$-2x + 2(1) = 2$$

$$-2x + 2 = 2$$
$$-2 \quad -2$$

$$\frac{-2x}{-2} = \frac{0}{-2}$$

$$x = 0$$

Steps:

1. Multiply one equation by whatever it takes to make the coefficients on one variable opposites.
2. Add equations
3. Solve for the variable
4. Substitute into an equation with both variables
5. Solve for the variable
6. What's the point?

$(0, 1)$

$$-8x + 9y = 25$$

$$2\cdot(4x + 3y = -5)$$

$$-8x + 9y = 25$$

$$+\quad 8x + 6y = -10$$

$$\frac{15y}{15} = \frac{15}{15}$$

$$y = 1$$

$$4x + 3(1) = -5$$

$$4x + 3 = -5$$

$$-3 \quad -3$$

$$\frac{4x}{4} = \frac{-8}{4}$$

$$x = -2$$

$$(-2, 1)$$

Steps:

1. Multiply one equation by whatever it takes to make the coefficients on one variable opposites.
2. Add equations
3. Solve for the variable
4. Substitute into an equation with both variables
5. Solve for the variable
6. What's the point?

Homework

Pink Systems WS8
#1-19 odd only

Due Wednesday