

Systems of Linear Equations

In This Unit:

1. Graphically
2. Substitution
3. Linear Combination

No Bellwork
02/06/2012

Lesson 6.1 Graphically

What You Need to Know:

A linear system has more than one equation.

Example:

$$3x-2y=11$$

$$-x+6y=7$$

For an ordered pair to be a solution, it must check into **BOTH** equations of the system!

To Find a Solution Graphically:

1. Graph **BOTH** equations
2. Find where the lines cross
3. Check the point back into the equations

Graphically

Decide whether the ordered pair is a solution to the system.

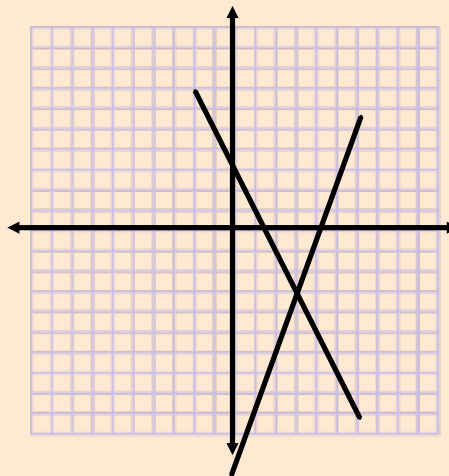
$$\begin{array}{l} 3x-2y=11 \\ -x+6y=7 \end{array} \quad (5,2)$$

$$\begin{array}{l} x+3y=15 \\ 4x+ y=6 \end{array} \quad (3,-6)$$

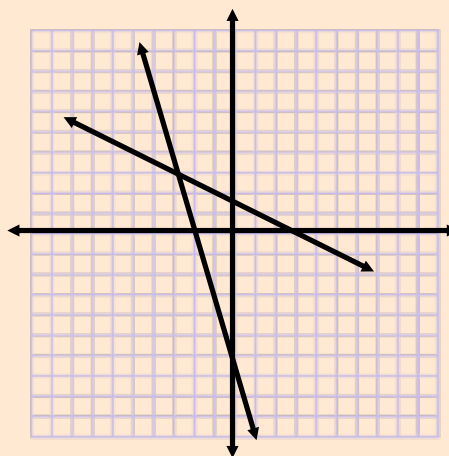
Graphically Cont.

Use the graph to solve the linear system. Check your solution!

$$y=3x-12$$
$$y=-2x+3$$



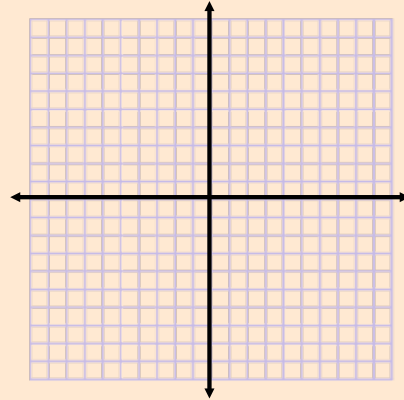
$$3x+y=-6$$
$$-x-2y=-3$$



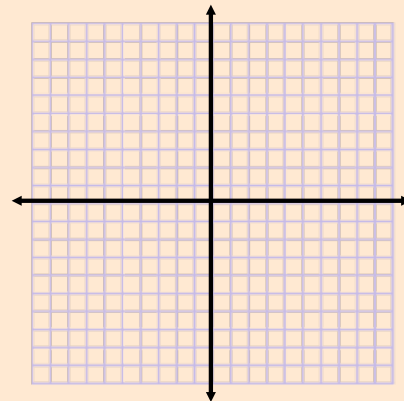
Graphically Cont.

Graph and check the linear system.

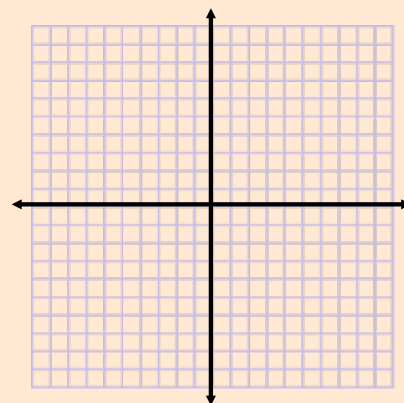
$$\begin{aligned}3x + y &= 11 \\ x - 2y &= 6\end{aligned}$$



$$\begin{aligned}-2x + y &= 2 \\ x + y &= -1\end{aligned}$$



$$\begin{aligned}x &= 3 \\ y &= -5\end{aligned}$$



Homework Assignment

Worksheet "Solving Systems Graphically"

Bellwork

02/08/2012

Solve the system graphically.

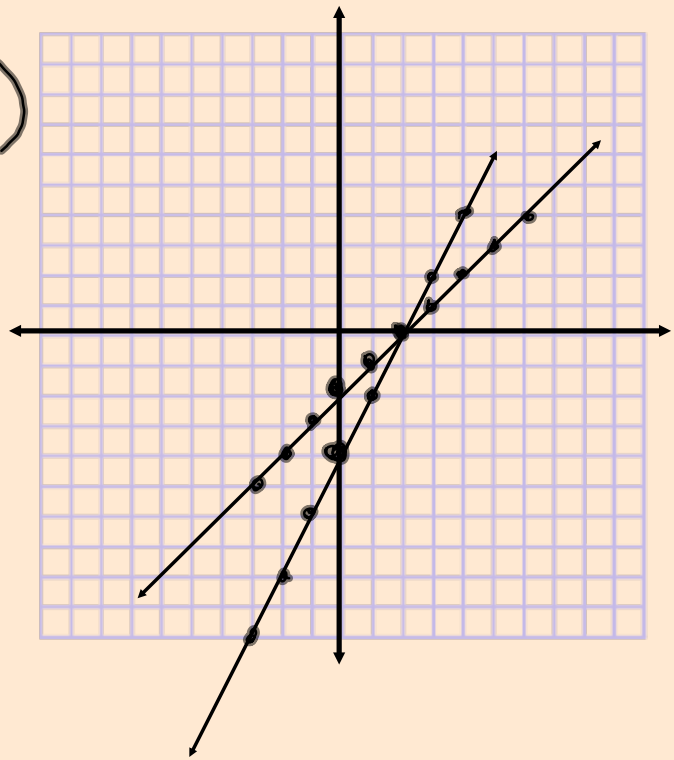
1. $2x - y = 4$ $(2, 0)$
 $x - y = 2$

$$\begin{array}{r} x - y = 2 \\ -x \quad -x \end{array}$$

$$\begin{array}{r} +y = -x + 2 \\ \hline +1 \quad -1 \quad -1 \end{array}$$

$$m = \frac{1}{-1} \quad y = x + (-2)$$

$$b = -2$$



Lesson 6.2

Substitution Method

What You Need to Know:

To use substitution, find a lonely variable!



The lonely variable is a variable with no number in front of it.

To Solve by Substitution:

1. Isolate a variable. [*star the new equation]
2. Substitute the new equation into the untouched equation.
3. Substitute the found value into the * equation.
4. Write your answer as an ordered pair and check!

Homework Assignment

Worksheet "Solving Systems by Substitution"

Bellwork
02/09/2012

Solve the system using substitution.

1. $2x - 3y = -2$
 $4x + y = 24$

Lesson 6.3

Linear Combination Method

What You Need to Know:

Solving a System by Linear Combination:

1. Line like variables in columns?
2. Multiply one or both equations to cancel a variable when adding?
3. Add and solve for one variable!
4. Substitute this value into *either* of the original equations to solve for the other variable!
5. Write answer as an ordered pair and check!

Linear Combination Method

Solve the system using linear combination. Check your answer!

$$\begin{aligned} -x+2y &= -8 \\ x+6y &= -16 \end{aligned}$$

$$\begin{aligned} x+2y &= 5 \\ 5x- y &= 3 \end{aligned}$$

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

$$\begin{aligned} 2u &= 4v+8 \\ 3v &= 5u-13 \end{aligned}$$

There are 16 workers employed on a highway project, some at \$200 per day, and some at \$165 per day. The daily payroll is \$2745. Write a system to find the number of workers employed at each wage.

Homework Assignment

Worksheet "Solving Systems by Linear Combination"