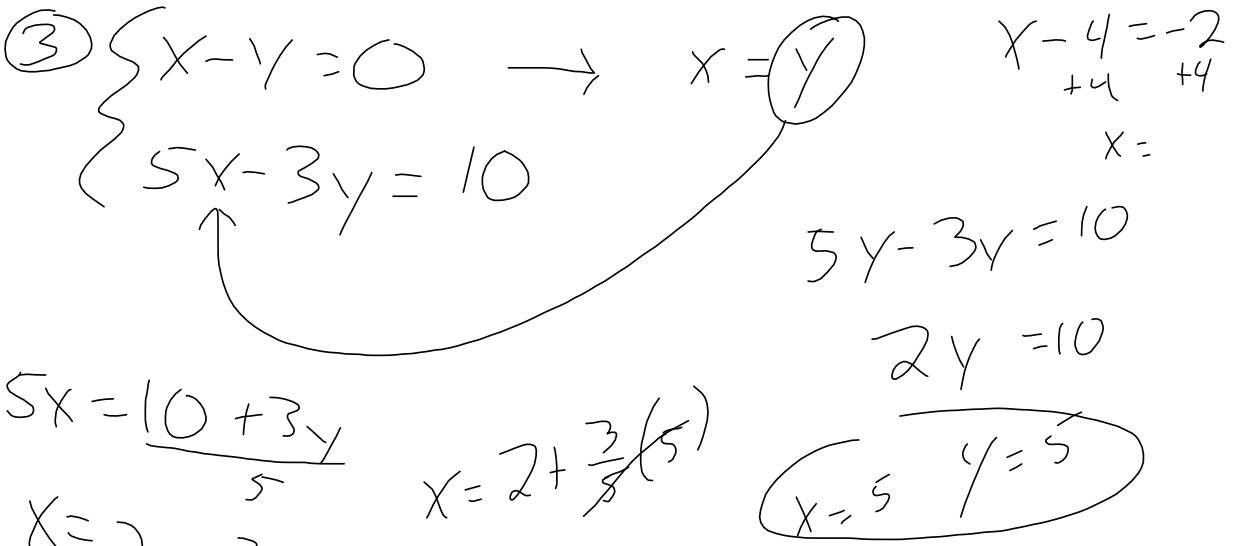

3
x - y = 0
5x - 3y = 10
x = y
x - 4 = -2
+4 +4
x =
5y - 3y = 10
2y = 10
y = 5
x = 5
5x = 10 + 3y
5
x = 2 + 3/5 y
x = 2 + 3/5 (5)
2 + 3/5 y - 5/5 y = 0
2 + -2/5 y = 0
2 = 2/5 y
2 · 5/2 = y

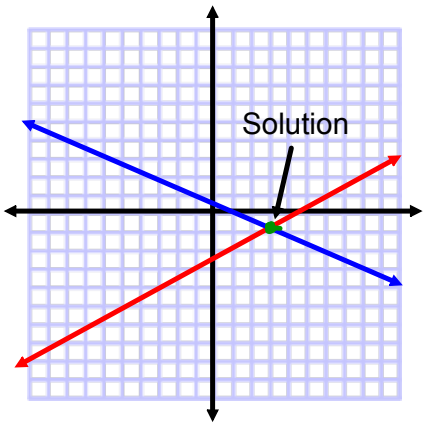
LESSON 7.2 Systems of Linear Equations

Graphical Interpretation - For these systems, the number of solutions is one of the following:

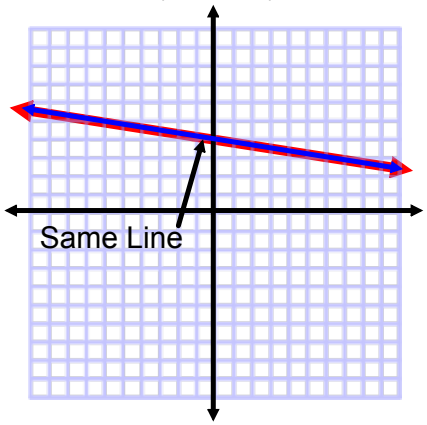
$4 = 4$ $0 = 4$

$0 = 0$

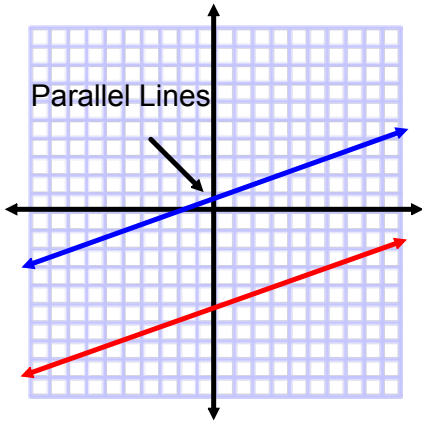
1. Exactly one



2. Infinitely many solutions



3. No solutions



Method of Elimination- main idea subtract the two equations to eliminate one of the variables.

STEPS

- Obtain coefficients for x (or y) that are equal by multiplying all terms of one equation by a constant.

- Subtract the equations to eliminate one variable and solve the resulting equation.

- Substitute this back into one of the original equations and solve.

- Check your solution in both of the original equations.

Example

Solve the system using the method of elimination.

$$\begin{cases} 5x+3y=9 \\ 2x-4y=14 \end{cases}$$

$\begin{cases} (\quad)2 \\ (\quad).5 \end{cases} \rightarrow$

$10x+6y=18$

$-(10x-20y=70)$

$26y=-52$

$\frac{26y}{26}=\frac{-52}{26}$

$y=-2$

$2x-4(-2)=14$

$2x+8=14$

$2x=6$ $\quad x=3$

$(3,-2)$

Example

Solve the system using the method of elimination.

$$\begin{cases} x-2y=3 \\ -2x+4y=1 \end{cases}$$ ·-2

$$-2x+4y=-6$$

$$-(-2x+4y=1)$$

$$0+0=-7$$ No sol.

$$0=-7$$

Example

Solve the system using the method of elimination.

$$\begin{cases} 2x - y = 1 \\ 4x - 2y = 2 \end{cases} \cdot 2$$

inf. sol.

$$4x - 2y = 2$$
$$-4x - 2y = 2$$
$$0 = 0$$