Solving Systems Using Substitution

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* At least one of the equations must be in y= form (or x= form)

Steps

1. Get 1 equation into y= (pick the easy one)
2. Substitue the expression you found in for "y" in the 2nd equation & Solve
3. Repeat step 2, BUT Solve for 2nd variable
4. Answer is an ordered Pair (x,y)

* You cannot Solve an equation that has 2 different variables *

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Examples

1. $y = 5$

$3x + 2y = 37$

$3x + 2(5) = 37$

$3x + 10 = 37$

$-10 \quad -10$

$\frac{3x}{3} = \frac{27}{3}$

$x = 9$

$(9, 5)$

2. $y = 3x - 5$

$8x + y = -16$

$8x + 3x - 5 = -16$

$11x - 5 = -16$

$+5 \quad +5$

$\frac{11x}{11} = \frac{-11}{11}$

$x = -1$

$y = 3(-1) - 5$

$y = -3 - 5$

$y = -8$

$(-1, -8)$

$y = -8$ $(-1, -8)$

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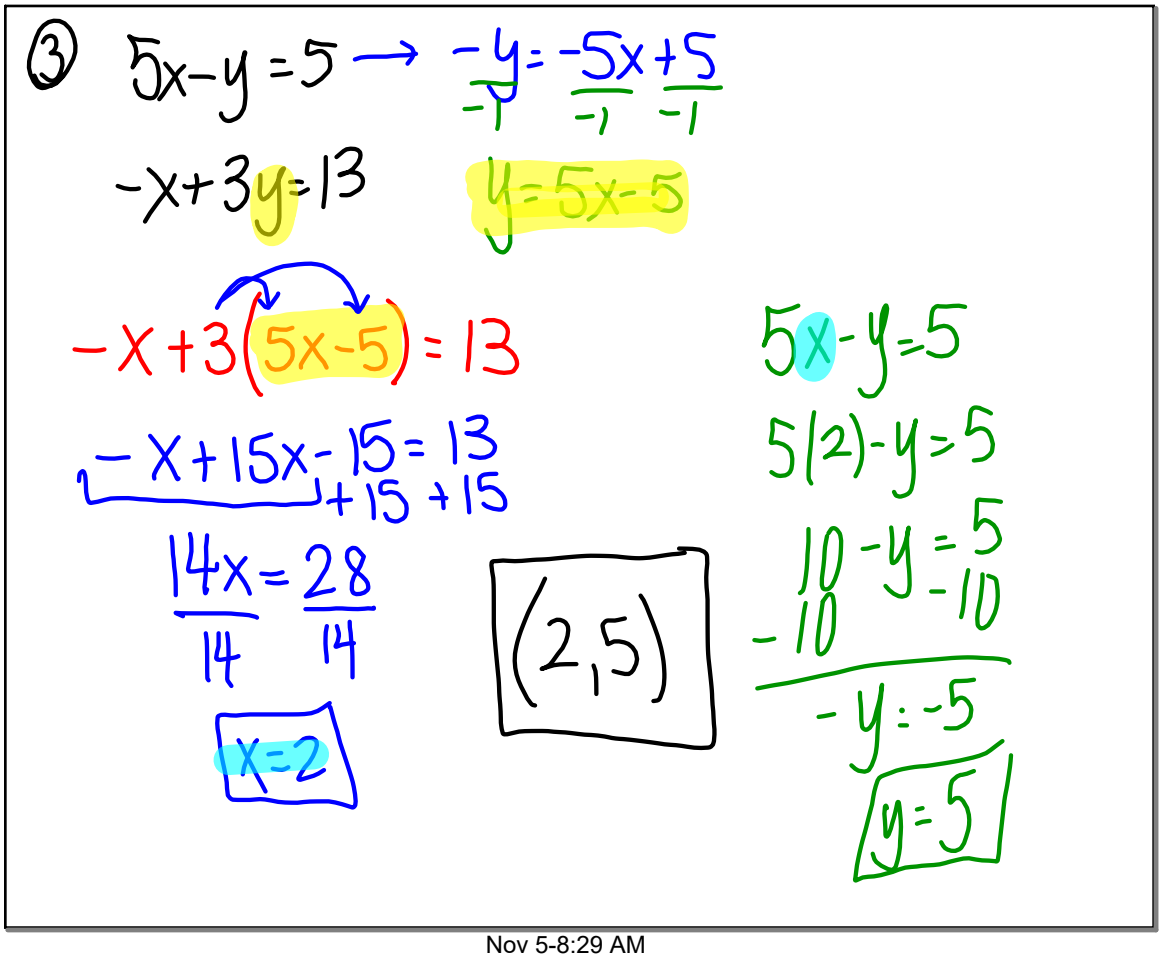
③ 5x-y=5 → -y=-5x+5
-y -1 -5x -1 +5 -1
-x+3y=13
y=5x-5
-x+3(5x-5)=13
-x+15x-15=13
+15 +15
14x=28
14 14
x=2
(2,5)
5x-y=5
5(2)-y=5
10-y=5
-10 -10
-y=-5
y=5

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