Algebra 1 6.2

Solve systems of equations using substitution method

Solve problems using substitution of equations

solve

solve by graphing

substitution

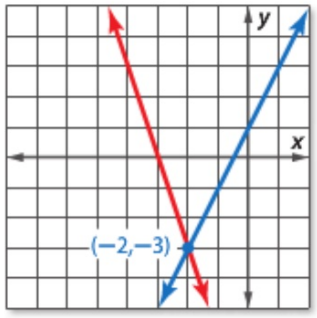
substitution method

no solution vs all real

whiteboards

you are the coach...

matching activ (if time)



Remember cut & paste activity?
You are the coach.

GuidedPractice

1A. $y = 4x - 6$
$5x + 3y = -1$

$y = 4 \cdot 1 - 6$
$= 4 + -6$
$= -2$

$-2 = 4 \cdot 1 - 6$
$-2 = 4 + -6$

$5x + 3(4x - 6) = -1$
$5x + 12x - 18 = -1$
$17x - 18 = -1$
$+18 \quad +18$
$\frac{17x}{17} = \frac{17}{17}$
$x = 1$

(1, -2)

$5 \cdot 1 + 3 \cdot -2 = -1$
$5 + -6 = -1$

KeyConcept Solving by Substitution

Step 1 When necessary, solve at least one equation for one variable.

Step 2 Substitute the resulting expression from Step 1 into the other equation to replace the variable. Then solve the equation.

Step 3 Substitute the value from Step 2 into either equation, and solve for the other variable. Write the solution as an ordered pair.

Make a good choice about which one is the sub list.

$8+2\cdot-1=6$

$8-2=6$

Example 2 Solve and then Substitute

Use substitution to solve the system of equations.

$x + 2y = 6$
$3x - 4y = 28$

$3\cdot8-4\cdot-1=28$

$24+4=28$

$x+2y=6$

$-2y \quad -2y$

$x=-2y+6$

x y

How to decide??? Solve for x or y???

$3(-2y+6)-4y=28$

$-6y+18-4y=28$

$x=-2\cdot-1+6$

$=2+6$

$=8$

(8, −1)

$-10y+18=28$

$-18 \quad -18$

$-10y=10$

$\frac{-10y}{-10}=\frac{10}{-10}$

GuidedPractice

2A. $4x + 3y = 11$

$y - 3x = -13$

$+3x \quad +3x$

$y = 3x - 13$

$3 \cdot 4 - 13$

$12 - 13$

$4x + 5(3x - 13) = 11$

$4x + 15x + -65 = 11$

$19x + -65 = 11$

$+65 \quad +65$

$19x = 76$

$\frac{19}{19} \quad \frac{76}{19}$

$x = 4$

$y = 6x$

$y = 6 \cdot -1$

$2x + 3y = -20$

$2x + 3(6x) = -20$

$2x + 18x = -20$

$\frac{20x}{20} = \frac{-20}{20}$

$x = -1$

$(-1, -6)$

$(4, -1)$

Whiteboards

2B. $x - 3y = -9$
$5x - 2y = 7$

$+3y \quad +3y$

$x = 3y - 9$

$x = 3 \cdot 4 - 9$

$12 - 9$

$5(3y - 9) - 2y = 7$

$15y - 45 - 2y = 7$

$13y - 45 = 7$

$+45 \quad +45$

$13y = 52$

$\frac{13y}{13} = \frac{52}{13}$

$y = 4$

$(3, 4)$

trick "☹"

$y = 2x + 3$

$2x - y = -5$

$2x + (2x + 3) = -5$

$2x + 2x + 3 = -5$

$4x + 3 = -5$

no sol.

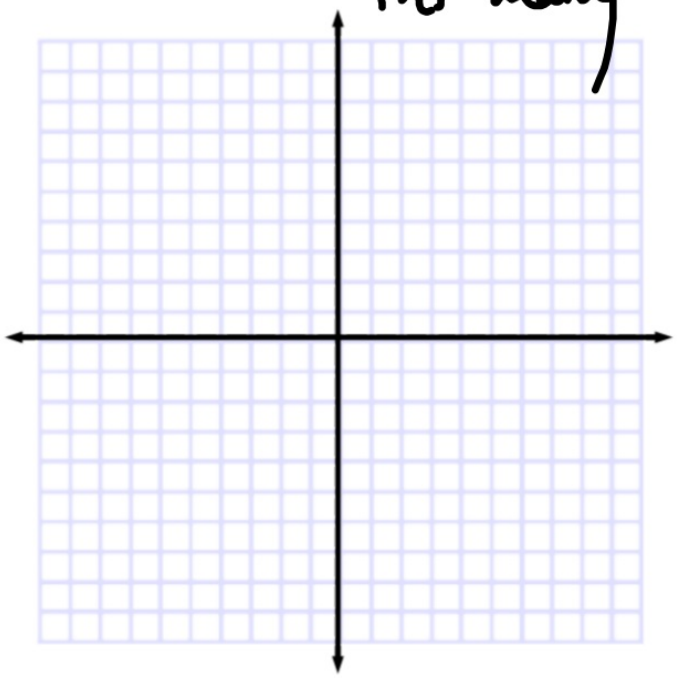
F

$$\begin{cases} x + y = 8 \\ y = 2x + 5 \end{cases}$$

$2 = 2$ T

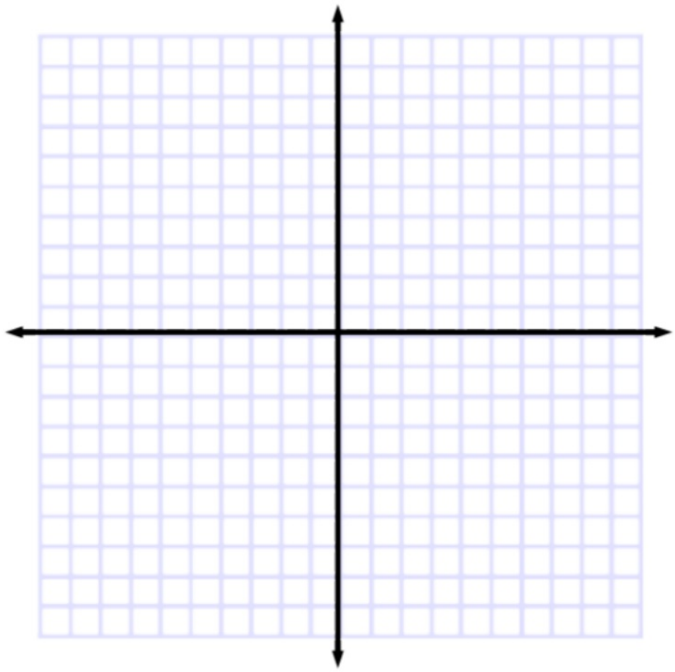
inf many

(1, 7)



$y = 5x + 3$

$10x + 6 = 2y$



So when is it "no solution" and when is it "all numbers"?
How to tell?