

Lesson 3.2- SWBAT solve systems of equations by substitution
 Kick off- Take out your homework and answer the following questions.

1) Is (3, -4) a solution of the system of equations: $-7x - 2y = -13$
 $x - 2y = 11$

$-13 = -13$ $11 = 11$
YES

2) Solve and graph $|6 - 2a| \leq 4$ 4 Write your answer in interval notation.

$6 - 2a \leq 4$
 $-2a \leq -2$
 $a \geq 1$

$-(6 - 2a) \leq 4$
 $-6 + 2a \leq 4$
 $2a \leq 10$
 $a \leq 5$

$|6 - 2(0)| \leq 4$ $|6 - 2(6)| \leq 4$
 $6 \leq 4$ $6 - 12 = -6$
 $6 \leq 4$

When asked "Is (x, y) a solution of the systems of equations?"

- 1) Substitute in the point for x and y in BOTH equations.
- 2) Check BOTH equations that it works
- 3) If it works the answer is YES if it DOESN'T work in BOTH the answer is NO

Substitution Method for Solving a System of Equations

- 1) Solve one of the equations of the system in terms of x or in terms of y.
- 2) Substitute that into the other equation for the variable.
- 3) Solve the equation.
- 4) Substitute that value into one of the equations to find the other variable
- 5) Check the solution (point) in BOTH equations.

1) Is (0, -3) a solution of the system of equations: $-5x + y = -3$
 $3x - 8y = 24$

2) Solve the system of equations by substitution: $4x - 2y = -14$
 $x = -2y - 21$

$4(-2y - 21) - 2y = -14$
 $-8y - 84 - 2y = -14$
 $-10y - 84 = -14$
 $-10y = 70$
 $y = -7$

$x = -2y - 21$
 $x = -2(-7) - 21$
 $x = -7$

ck: $4x - 2y = -14$
 $4(-7) - 2(-7) = -14$
 $-28 + 14 = -14$
 $-14 = -14$ ✓

ck: $x = -2y - 21$
 $-7 = -2(-7) - 21$
 $-7 = -14 - 21$
 $-7 = -35$ ✗

3) Is (5, 4) a solution of the system of equations: $8x - y = -6$
 $-16x + 2y = -5$

4) Solve the system of equations by substitution: $x - 7y = -15$
 $3x + 2y = 24$

$3(-15 + 7y) + 2y = 24$
 $-45 + 21y + 2y = 24$
 $-45 + 23y = 24$
 $23y = 69$
 $y = 3$

$x - 7y = -15$
 $x - 7(3) = -15$
 $x - 21 = -15$
 $x = 6$

ck: $x - 7y = -15$
 $6 - 7(3) = -15$
 $6 - 21 = -15$
 $-15 = -15$ ✓

ck: $3x + 2y = 24$
 $3(6) + 2(3) = 24$
 $18 + 6 = 24$
 $24 = 24$ ✓

5) Solve the system of equations by substitution: $-8x + 2y = 0$
 $x = 3y$

6) Is $(3, -1)$ a solution of the system of equations: $-4x + y = -17$
 $-5x - 7y = -13$