Day 2 – Substitution

As with graphing, you will not always get an exact value for *x* and *y*; how many possible answers can a system of linear equations have? 3

List them:

How many solutions does each system have? Solve using the substitution method.

1. $x = -2y + 4$

   $3.5x + 7y = 14$

$3.5(-2y+4) + 7y = 14$

$-7y + 14 + 7y = 14$

$14 = 14$

Infinitely Many Solutions

$x = -2y + 4$

$+2y \quad +2y$

$2y + x = 4$

$-x \quad -x$

$\frac{2y}{2} = \frac{-x}{2} + \frac{4}{2}$

$y = \frac{-1}{2}x + 2$

$3.5x + 7y = 14$

$-3.5x \quad -3.5x$

$\frac{7y}{7} = \frac{-3.5x}{7} + \frac{14}{7}$

$y = \frac{-1}{2}x + 2$

If you write each equation in slope-intercept form, what do you notice?

They are the same equation, same line.

What does it mean? They are the same so infinitely many solutions.

2. $y = 3x - 11$

   $y - 3x = -13$

No Solution

$3x - 11 - 3x = -13$

$-11 = -13$

$y - 3x = -13$

$+3x \quad +3x$

$y = 3x - 11 \qquad y = 3x - 13$

If you write each equation in slope-intercept form, what do you notice?

They have the same slopes so they are parallel.

What does it mean?

They don't intersect.