Name _____ April 29, 2020

Alg1 Solving Systems Graphically (non-linear)

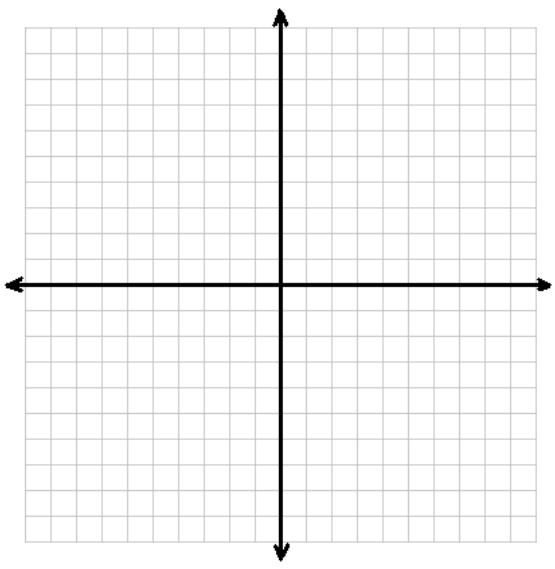
In this packet we are going to get back to solving systems of equations graphically. When we did this back in the 3rd quarter, the systems always involved 2 LINEAR EQUATIONS. Our main strategy was to graph both lines and find the point of intersection. The point of intersection was the lone solution to the system. Now one or both of the equations will be non-linear. They will be the types of equations we learned how to graph in the last packet; quadratic, exponential, and absolute value equations.

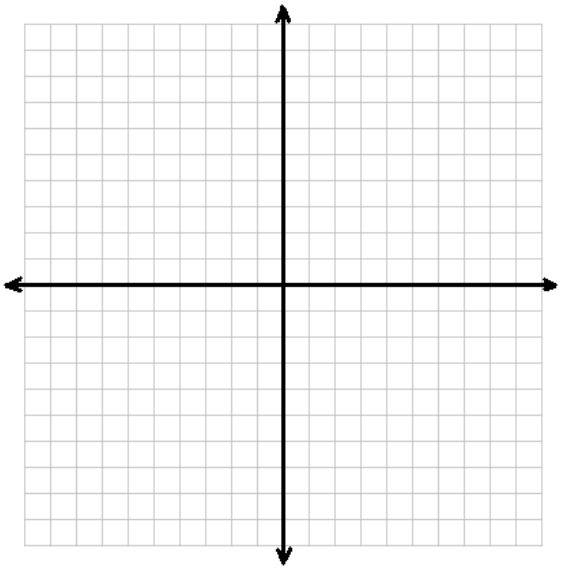
Our strategy will still be the same. We will graph both equations and find the point OR POINTS of intersection. You read that correctly. You can now have more than 1 point of intersection.

Before we get into graphing systems of equations, let's do a quick review of graphing linear equations. There will be a youtube video posted on the website of me doing the following examples (A and B).

A: Graph: $16x - 4y = 8$

B: Graph $y - 4 = {}^{-2}/_{3}(x + 9)$

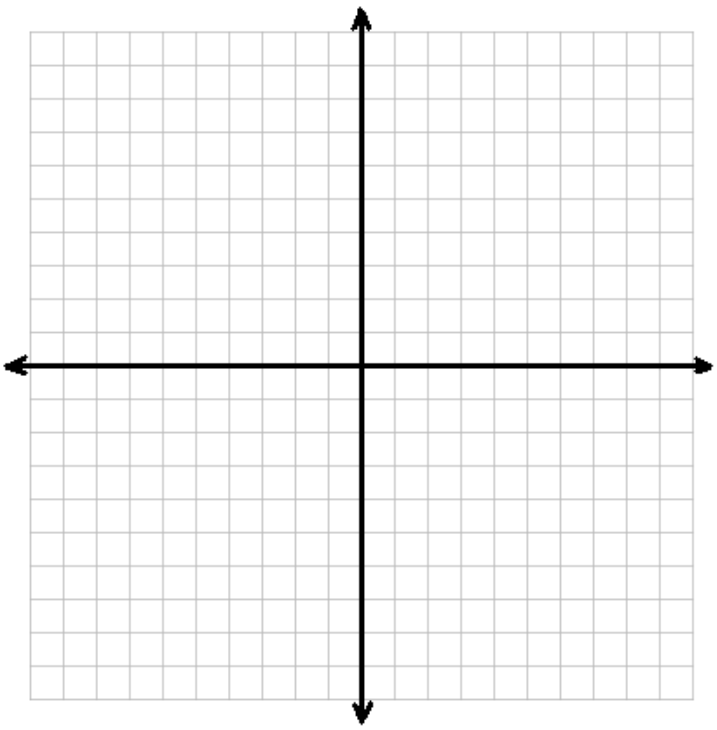




This (C) will be the first system we solve graphically. There will be a youtube link on the Algebra 1 page with me doing the problem.

Solve each system GRAPHICALLY:

C) $y = x^2 - 6x + 2$
$18x - 9y = 45$



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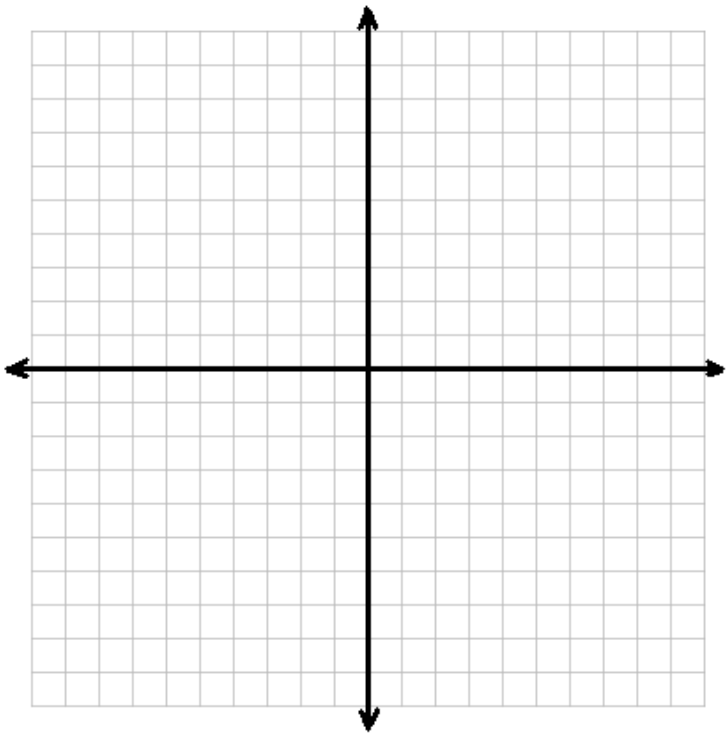
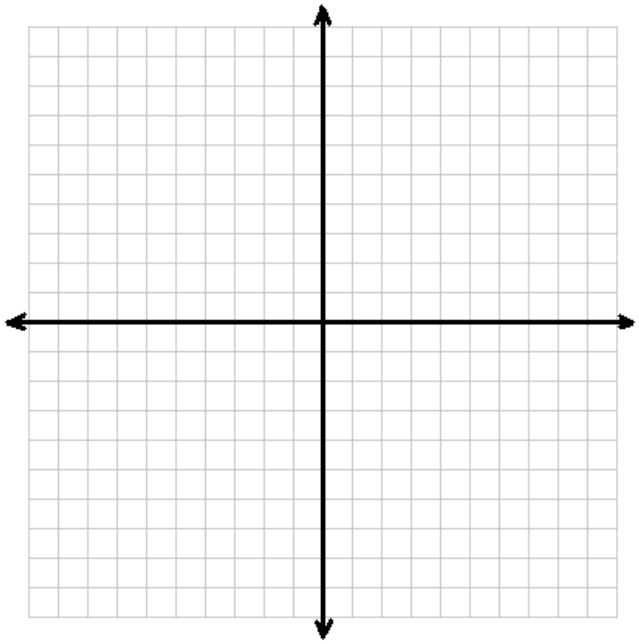
Solve each system graphically and check (using the calculator);

1) $y = x^2 + 3x - 4$

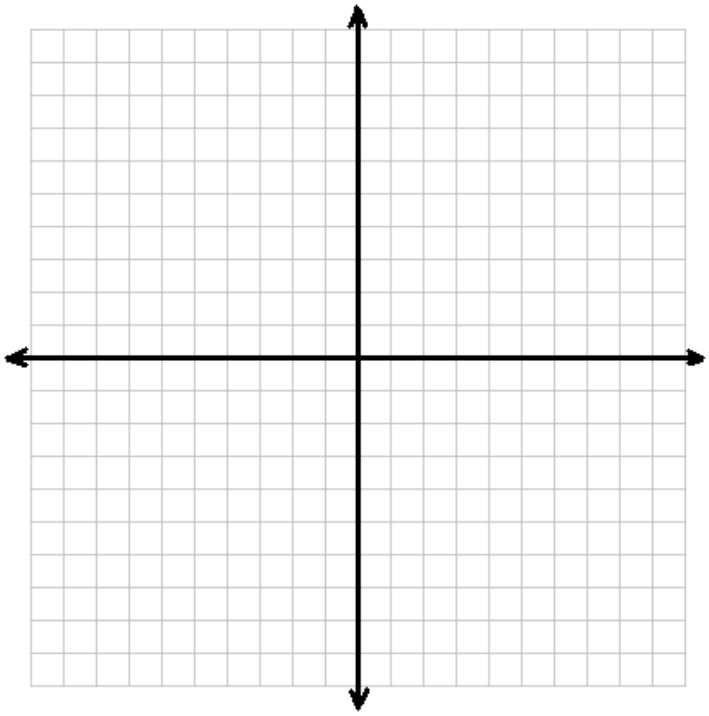
$y + 4 = 2(x + 3)$



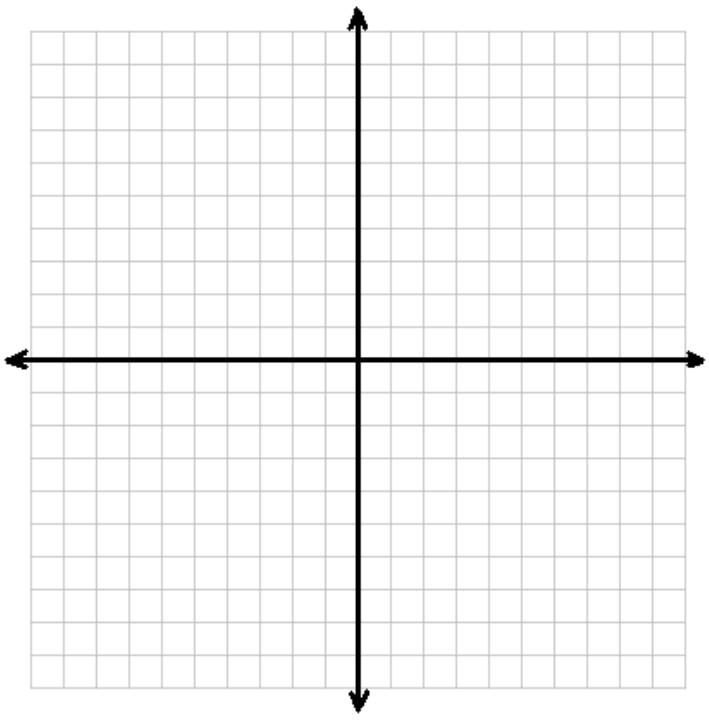
2) $y = -x^2 + 6x - 3$
$15x + 15y = -45$



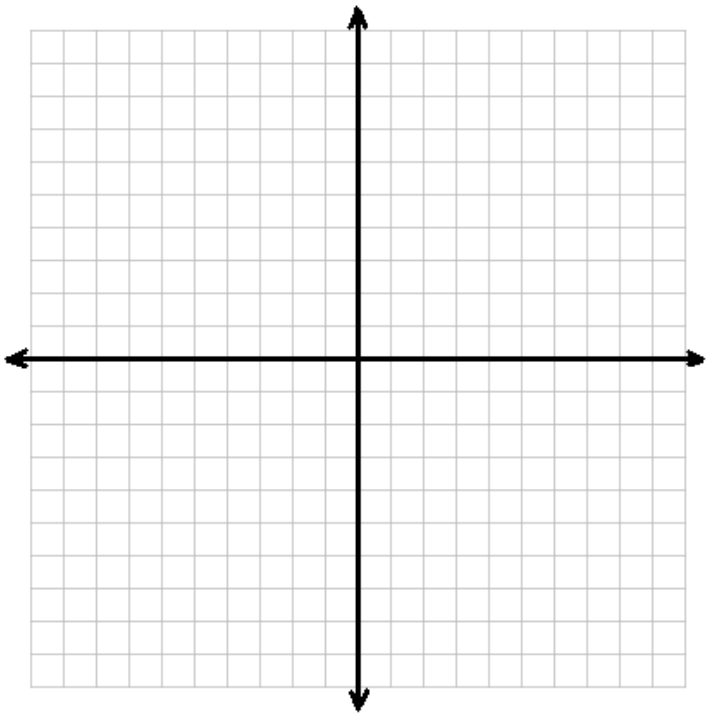
3) $y = -3x^2 + 8$
$y = 5$



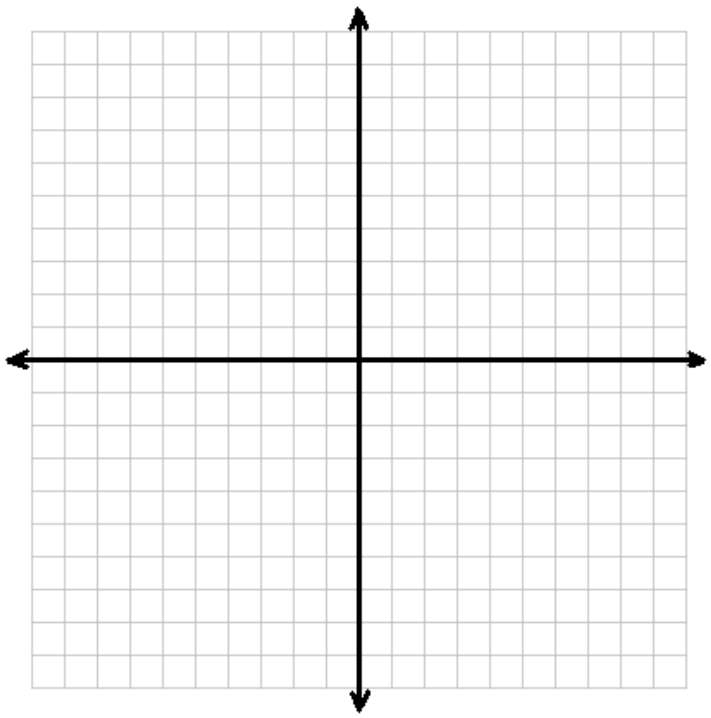
4) $y = 3^x - 5$
$12x - 3y = 12$



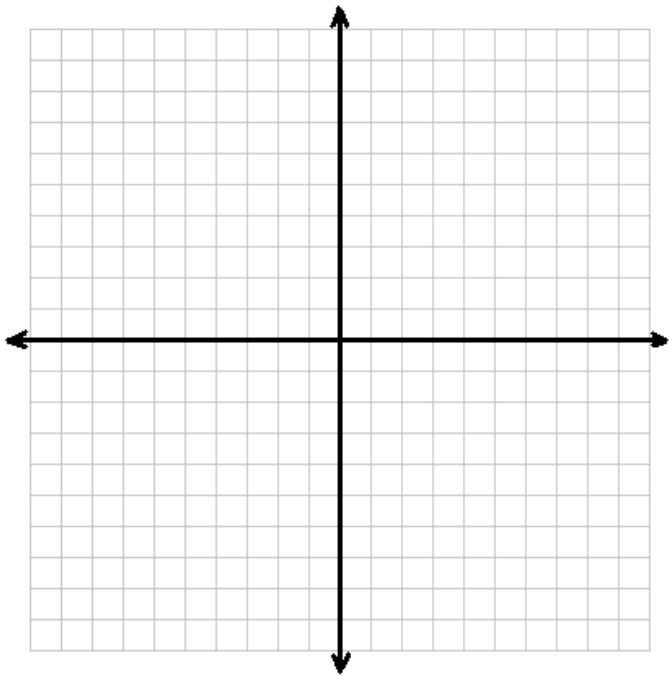
5) $y = \frac{1}{2}^{x} + 2$
$y - 4 = -3(x + 1)$



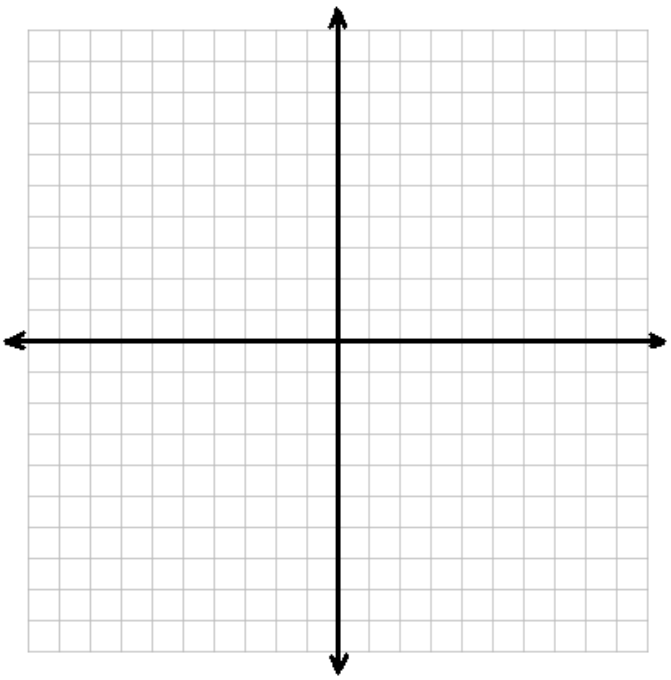
6) $y = |3x - 3| - 4$
$8x + 8y = 40$



7) $y = -|2x + 6| + 7$
$y = -3$



8) $y = 2^x - 7$
$48x + 16 = -32$



Answer Key:
1) (-3,-4)(2,6)
2) (0,-3)(7,-10)
3) (-1,5)(1,5)
4) (0,-4)(2,4)
5) (-3,10)(-1,4)
6) (-3,8)(3,2)
7) (-8,-3)(2,-3)
8) (1,-5) (They only intersected at one point.)