NAME _____ DATE _____

Study Guide

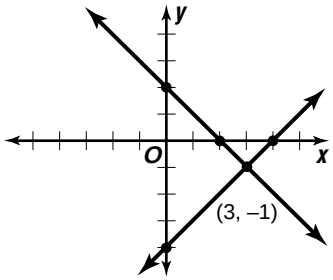
Student Edition
Pages 454–461

Graphing Systems of Equations

Two or more linear equations involving the same variables form a **system of equations.** The solution set for the system is the set of ordered pairs that satisfy both equations. One method for solving a system of equations is to graph the equations on the same coordinate plane.

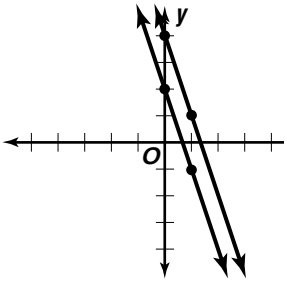
Examples: Solve each system of equations by graphing.

$x + y = 2$
$x - y = 4$

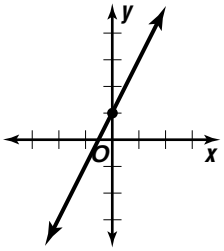


The point $(3, -1)$ lies on both lines, thus $(3, -1)$ is the solution set for the system of equations.

$3x + y = 2$
$3x + y = 4$
no solution

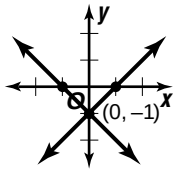


$y = 2x + 1$
$2y = 4x + 2$
infinitely many solutions

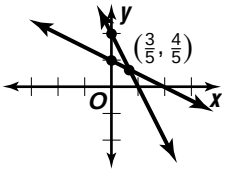


Use the graphs below to determine whether each system has <u>one</u> solution, <u>no</u> solution, or <u>infinitely many</u> solutions. If the system has one solution, name it.

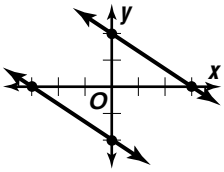
1. $x - y = 1$
$x + y = -1$



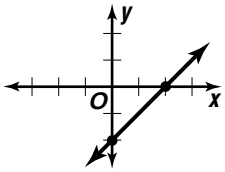
2. $x + 3y = 3$
$2x + y = 2$



3. $2x + 3y = 6$
$2x + 3y = -6$



4. $x - y = 2$
$2x - 2y = 4$



Graph each system of equations on a separate sheet of paper. Then determine whether the system has <u>one</u> solution, <u>no</u> solution, or <u>infinitely many</u> solutions. If the system has one solution, name it.

5. $4x - 2y = 4$
$4x - 2y = 0$

6. $y = x + 2$
$y = 2x - 1$

7. $x + y = 1$
$3x + 3y = 3$

8. $2x - 2y = 2$
$y = x$