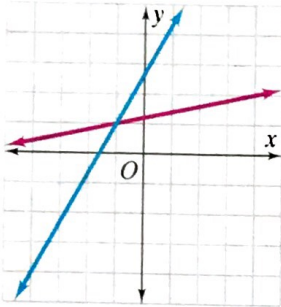


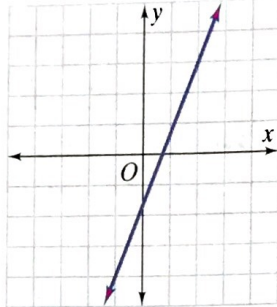
Solutions of Linear Systems

One Solution



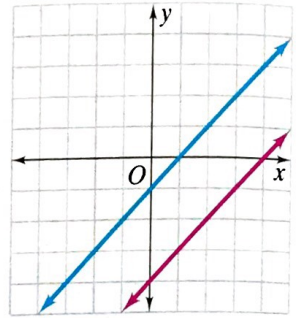
The lines have different slopes and intersect at one point.

Infinitely Many Solutions



The lines have the same slope and y -intercept. They are the same line.

No Solution



The lines have the same slope and different y -intercepts. They are parallel and do not intersect.

EXAMPLES Special Types of Linear Systems

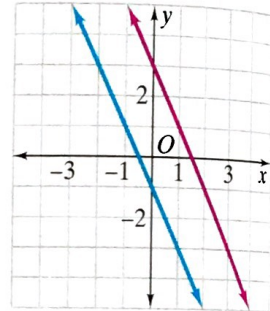
- 1** Solve the system of equations by graphing. $y = -2x + 3$
 $y = -2x - 1$

Graph both equations in the same coordinate plane.

$y = -2x + 3$ ← The slope is -2 . The y -intercept is 3 .

$y = -2x - 1$ ← The slope is -2 . The y -intercept is -1 .

The lines are parallel. The system has *no solution*.



- 2** Solve the system of equations by graphing. $2x - 2y = 4$
 $-x + y = -2$

Graph both equations in the same coordinate plane.

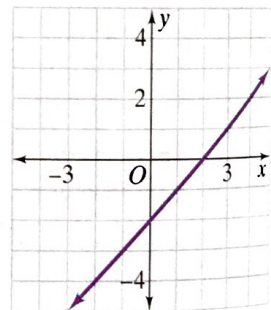
$$2x - 2y = 4$$

$$-x + y = -2$$

x	0	1	2
y	-2	-1	0

x	0	1	2
y	-2	-1	0

The equations represent the same line. The system has *infinitely many solutions*.



Exercises

Solve each system by graphing.

1. $2y = 6x + 4$

2. $2x - 6y = 6$

3. $y = 2x + 6$

$3x - y = -2$

$3y = x + 3$

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