

Sec. 3.1 Solving Systems Using Tables and Graphs

Vocabulary

- system of equations: a set of two or more equations
- linear system: consists of linear equations
- solution of a system: a set of values for the variables that make all the equations true
- inconsistent system: no solution ex: parallel lines
- consistent system: has at least one solution
 - dependent: has infinitely many solutions ex: same line
 - independent: has one solution (linear) ex: perpendicular lines

Problem 1: Solve by graphing.

a. $2x - y = -1$ $\begin{array}{r|l} -\frac{1}{2} & 0 \\ \hline 0 & 1 \end{array}$

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

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

$m = -\frac{A}{B} = -\frac{-2}{-1} = 2$

b. $x - 2y = 4$
 $3x + y = 5$

$y = -3x + 5$

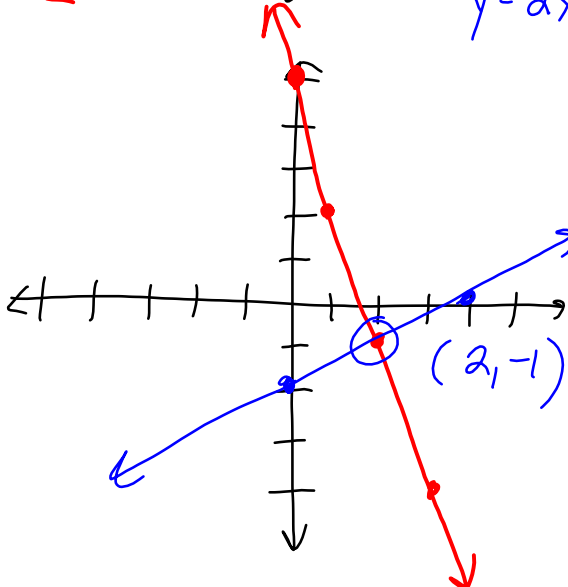
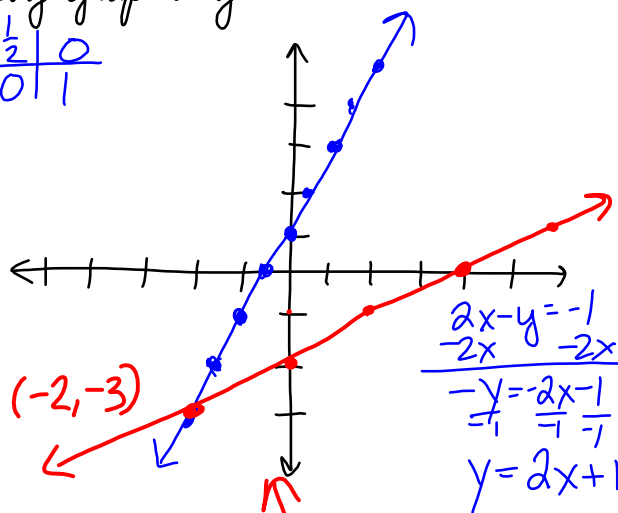
$m = -\frac{3}{1}$

$x - 2y = 4$

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

$(4, 0)$ $y = -2$

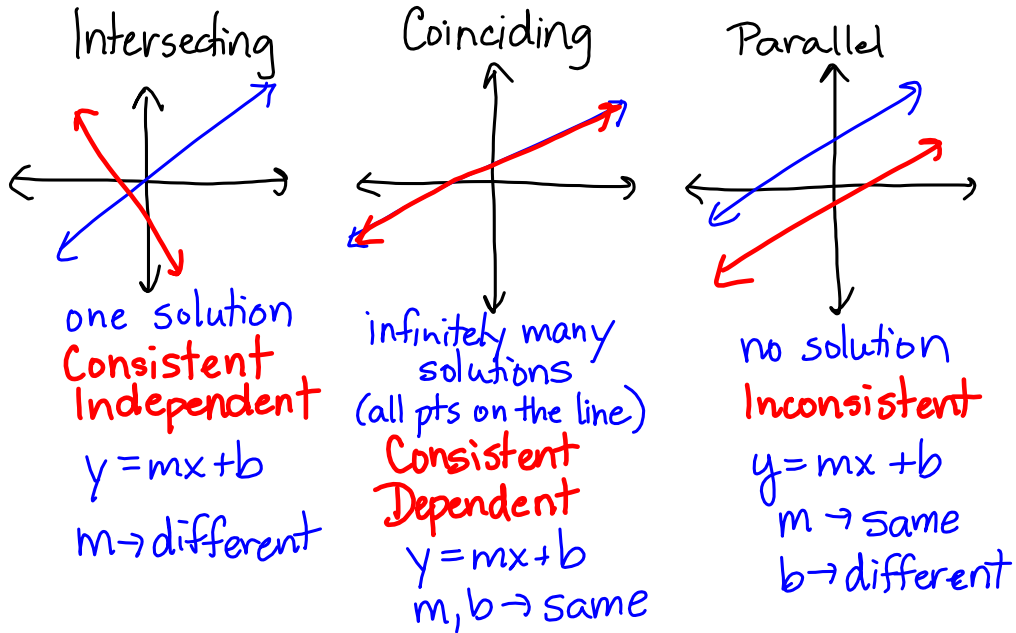
$(0, -2)$



Problem 2:

Determine without graphing whether the system is independent, dependent, or inconsistent.

Note:



a. $3x - 4y = 6$
 $6x + 3 = 8y$

$$\begin{array}{r} 3x - 4y = 6 \\ -3x \quad -3x \\ \hline \end{array}$$

$$\frac{6x + 3}{8} = \frac{8y}{8}$$

$$\frac{-4y}{-4} = \frac{-3x + 6}{-4} \quad \frac{3}{4}x + \frac{3}{8} = y$$

Inconsistent

$$y = \frac{3}{4}x - \frac{3}{2}$$

$$y = \frac{3}{4}x + \frac{3}{8}$$

b. $2x + 3y = 1$
 $4x + y = -3$

$$\begin{array}{r} 2x + 3y = 1 \\ -4x + y = -3 \\ \hline \end{array}$$

$$y = -4x - 3$$

$$\begin{array}{r} 2x + 3y = 1 \\ -2x \quad -2x \\ \hline \end{array}$$

$$\frac{3y}{3} = \frac{-2x + 1}{3}$$

$$y = -\frac{2}{3}x + \frac{1}{3}$$

Independent