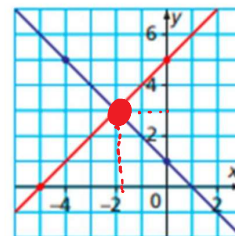# 6.1 Part 1

Wednesday, May 10, 2023   3:06 PM

A linear equation system: two linear equations that have the same two variables.

The solution of a linear equation system: The point of intersection, or ordered pair, of the two linear equations represents the solution.

(x, y)

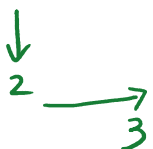**Example 1 :** Determine the solution to the linear system.

$(-2, 3)$

Example 2 : Solve each linear system graphically.

$y = mx + b$

a) $y = -\frac{2}{3}x + 1$ and $y = x - 4$
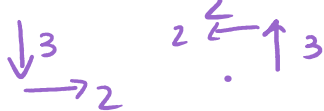
① $m = -\frac{2}{3}$

② $m = 1 = \frac{1}{1}$

$b = 1$

$b = -4$

Slope $= -\frac{2}{3}$

slope $= \frac{+1}{1}$

$\uparrow_1 \longrightarrow 1$

$\downarrow$

$2 \longrightarrow 3$

intersection point $(3, -1)$

b) $3x + 2y = -12$ and $-2x + y = 1$

$-3x \qquad -3x$

$y = mx + b$

$-2x + y = 1$

$+2x \qquad +2x$

$\frac{2y}{2} = \frac{-3x}{2} - \frac{12}{2}$

$y = 2x + 1$

$y = -\frac{3}{2}x - 6$

$m = 2 = \frac{2}{1} \quad \uparrow^2 \rightarrow 1$

Slope $= m = -\frac{3}{2}$

$b = 1$

$\downarrow 3 \qquad 2 \frac{2}{2} \uparrow 3$

$\longrightarrow 2$
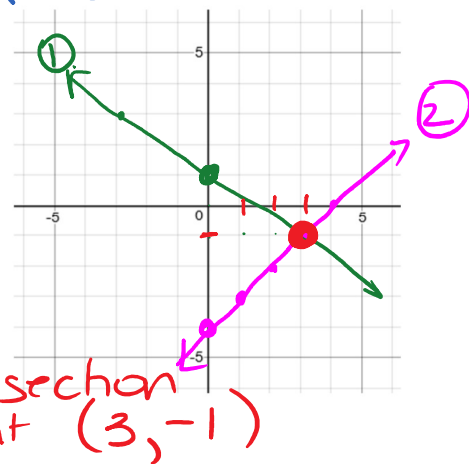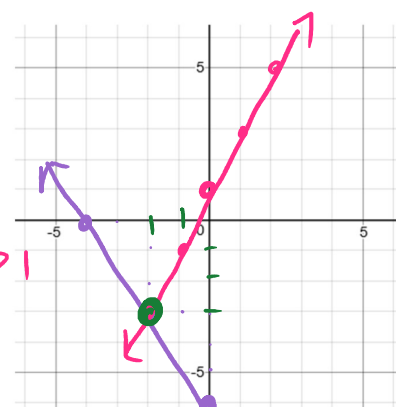
intersection point $(-2, -3)$

y-int $= b = -b$

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①

c) $-2x - 6y = -6$ and $x - y = 3$

Rewrite as $y = mx + b$
Slope intercept form

①
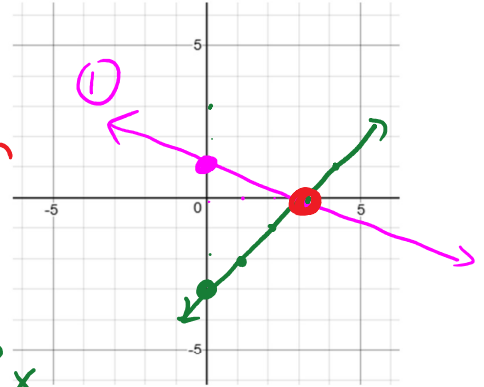
① $-2x - 6y = -6$
$+2x \qquad +2x$

$\dfrac{-6y}{-6} = \dfrac{2x}{-6} - \dfrac{6}{-6}$

$y = \dfrac{2^{\div 2}}{-6 \div 2}x - \dfrac{6}{-6}$

$y = -\dfrac{1}{3}x + 1$
$\qquad$ y-int = 1

Slope $= -\dfrac{1}{3}$ $\quad \downarrow 1 \longrightarrow 3$

② $x - y = 3$
$-x \qquad -x$

$\dfrac{-y}{-1} = \dfrac{-x}{-1} + \dfrac{3}{-1}$

$y = 1x - 3$

y-int = $^-3$

Slope $= 1 = \dfrac{1}{1}$ $\quad \uparrow 1 \rightarrow 1$

intersection point
$(3, 0)$

Practice: Exercise 6.1

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