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MAT1275 CD/OL27 - Class # 5

Thurs, Sept. 9

- finish 2x2 linear systems
(WW: "Linear Systems") — due Tues
(Sept. 14)

- start 3x3 linear systems
(WW: "3x3 Systems") — due Tues, Sept 21

Quiz #1: next week (on videos)
(discuss + post in class on Tues)
- due Wed morning)

2x2 linear system - solve algebraically

2

Linear Systems, #2 :

Given 2 linear equations :

(1) $\left\{ \begin{array}{l} \underline{y} = \frac{5}{3}x - 1 \\ \underline{y} = x - 3 \end{array} \right. \rightarrow \text{equal!}$

(2) $\left\{ \begin{array}{l} \underline{y} = \frac{5}{3}x - 1 \\ \underline{y} = x - 3 \end{array} \right.$

2x2

→ use the "substitution method"
to reduce these 2 equations in 2 var's
to 1 equation in 1 variable!

$$\frac{5}{3}x - 1 = x - 3 \quad \left. \begin{array}{l} \} \text{solve for } x \\ \} \text{(and then solve for } y!) \end{array} \right\}$$

Given:

$$\left\{ \begin{array}{l} (1) y = \frac{5}{3}x - 1 \\ (2) y = x - 3 \end{array} \right. \Rightarrow \frac{5}{3}x - 1 = x - 3$$

rise/run = 1.66...

(3)

solve for x!

$$\Rightarrow \frac{5}{3}x - x = -3 + 1$$

(x-coord of the point where the 2 lines intersect)

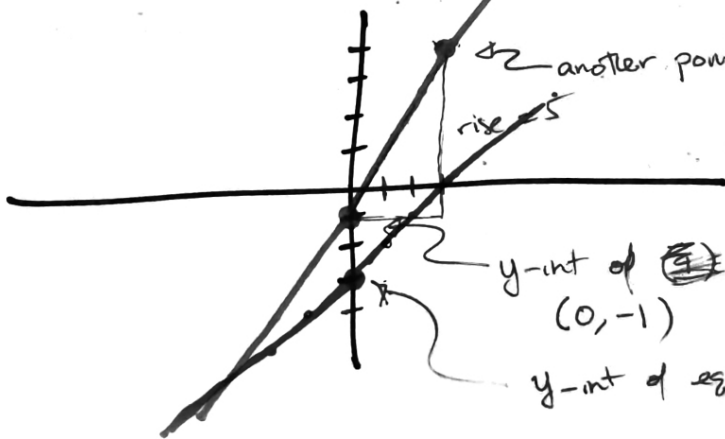
$$\frac{3}{2} \cdot \frac{2}{3}x = -2 \cdot \frac{3}{2} \Rightarrow$$

$$\boxed{x = -3}$$

$$\Rightarrow y = x - 3 = -3 - 3 = -6$$

$$y = \frac{5}{3}x - 1$$

Solution: (-3, -6)



↖ another point on line (1)

rise = 5

y-int of ~~(1)~~ equation (1)
(0, -1)

y-int of eqn (2) is (0, -3)