Class Logistics

Lectures

Sections

OH (M 10-11:30, W 10-10:30, Th 4-5 pm)
(same zoom link as discussion)

HW (assigned after lecture, due Tuesday of the following week)

Quizzes (released Wednesday morning, due 24 hours later)

Exams

Class websites

Nikhil's website (official source for course logistics, homework assignments)

Gradescope (turn in all homework, quizzes, exams here)

bcourses (HW/Quiz solutions, lecture notes)

Piazza (Ask & answer questions, times/zoom links for all GSIs)

My website (worksheets, feedback form, useful links)

Plan for discussion sections

- Questions
- HW/Quiz feedback
- Worksheet practice problems
  - Discuss together
  - Go over solutions
- Challenge problems
- Polls/Chat

How many solutions? What are they?

① $3x - 4y = 2$
$x + y = 3$

② $2x - y = 1$
$-6x + 3y = -3$

③ $3x + 2y = 0$
$-6x - 4y = 1$

① $3x - 4y = 2$

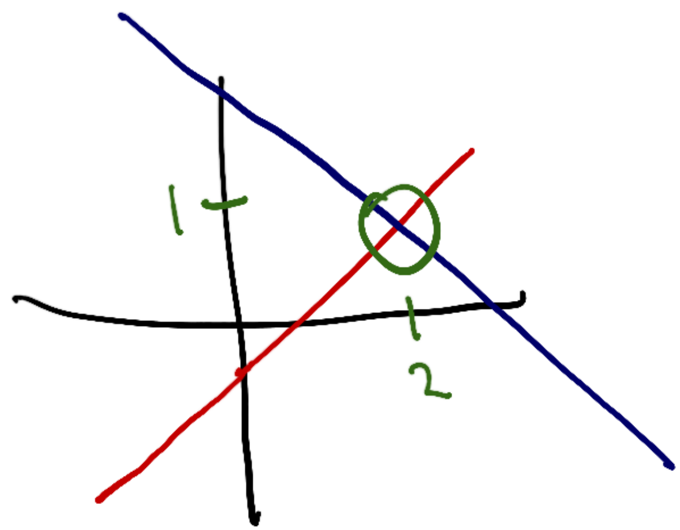
$-3(x + y = 3)$

$0 - 7y = -7 \Rightarrow y = 1$

$x + y = 3 \Rightarrow x + 1 = 3 \Rightarrow x = 2$

$y = \frac{3}{4}x - \frac{1}{2}$

$y = -x + 3$



1 solution: $x = 2, \quad y = 1$

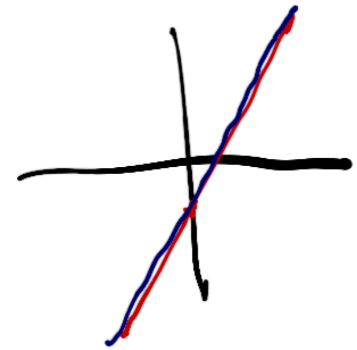
② $3(2x - y = 1)$

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

$$0 + 0 = 0$$

$y = 2x-1$

$y = 2x-1$



$$2x - y = 1 \Rightarrow y = 2x - 1$$

Try plugging it into the second equation:

$$-6x + 3(2x-1) = -6x + 6x - 3 = -3$$

So for any x, setting $y = 2x-1$ satisfies both equations.

Infinitely many solutions:

$x = t \quad y = 2t - 1$ is a solution for any t

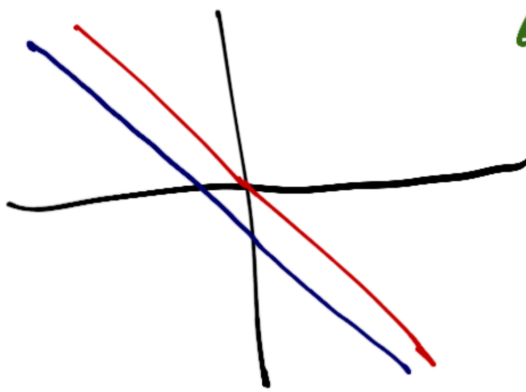
③ $2(3x + 2y = 0)$

$$-6x - 4y = 1$$

$0 + 0 = 1 \Rightarrow$ no solutions exist

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

$$y = -\frac{3}{2}x - \frac{1}{4}$$



← parallel lines

soon we'll have a more systematic way to do all of this

④ Find a system of 2 linear equations in 3 variables (x, y and z) with:

- 0 solutions
- infinitely many solutions
- what about 1 solution?

0 : $\begin{cases} x + y + z = 1 \\ 3x + 3y + 3z = 4 \end{cases}$

1 : Not possible (we'll see more about this soon)

∞ : $\begin{cases} x + y + z = 1 \\ x + 2y + 3z = 4 \end{cases}$