

Special Linear Systems (no solutions, infinite solutions)

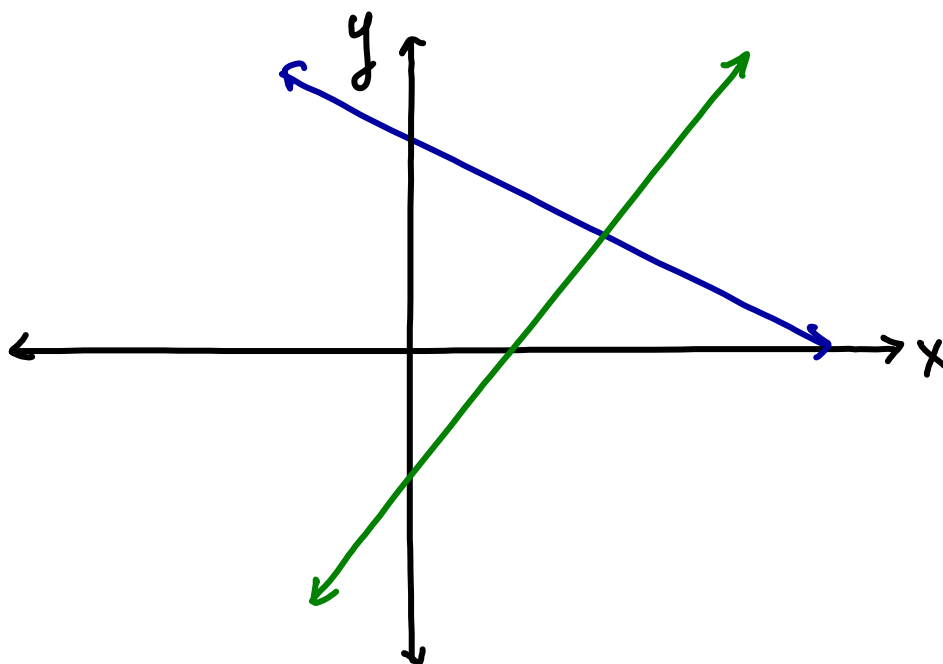


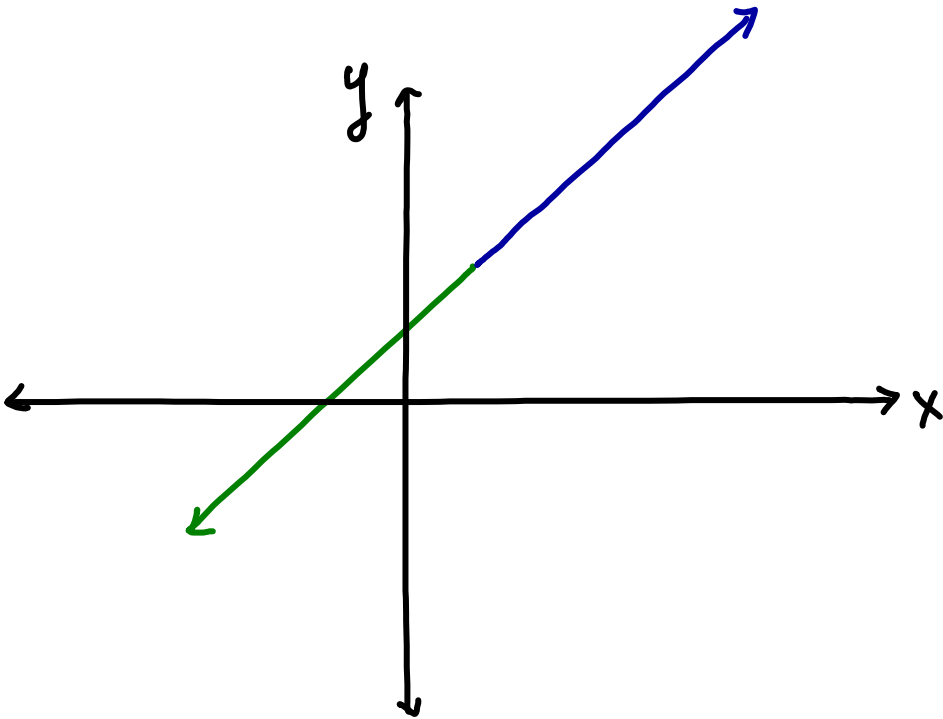
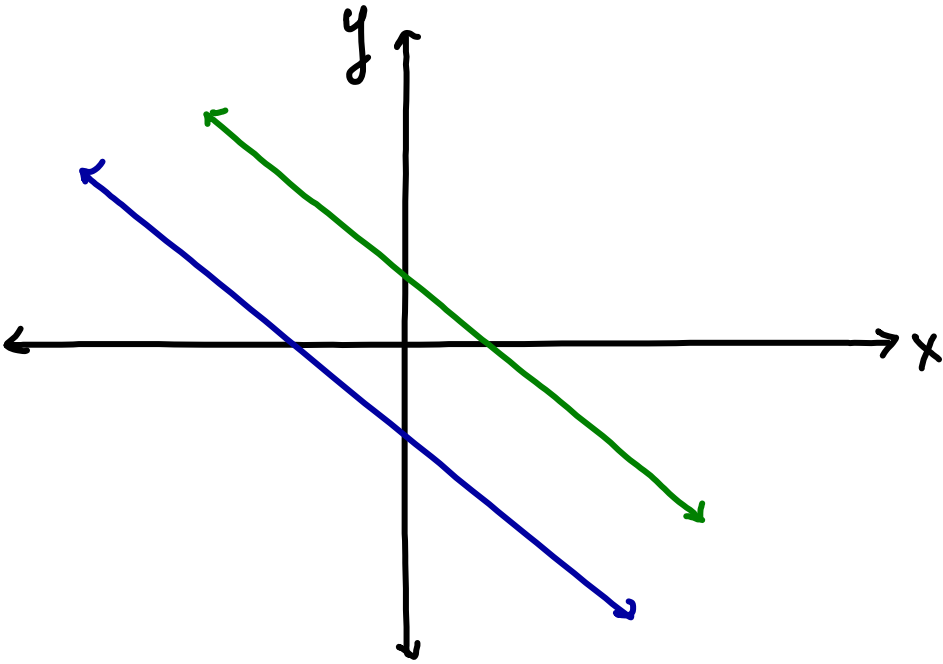
Overview of problems



Example Set: A

Given the graph of the system describe its solution and equations







Example Set: B

Prove that the system has no solutions (inconsistent)

$$\begin{cases} y = 2x - 3 \\ y = 2x + 1 \end{cases}$$

$$\begin{cases} 4x + y = 1 \\ 8x + 2y = 9 \end{cases}$$

Prove that the system has many or infinite solutions
(dependent)

$$\begin{cases} y = \frac{1}{2}x - 4 \\ 2y = x - 8 \end{cases}$$

$$\begin{cases} 3x + 2y = -1 \\ -6x - 4y = 2 \end{cases}$$

Special Linear Systems (no solutions, infinite solutions)

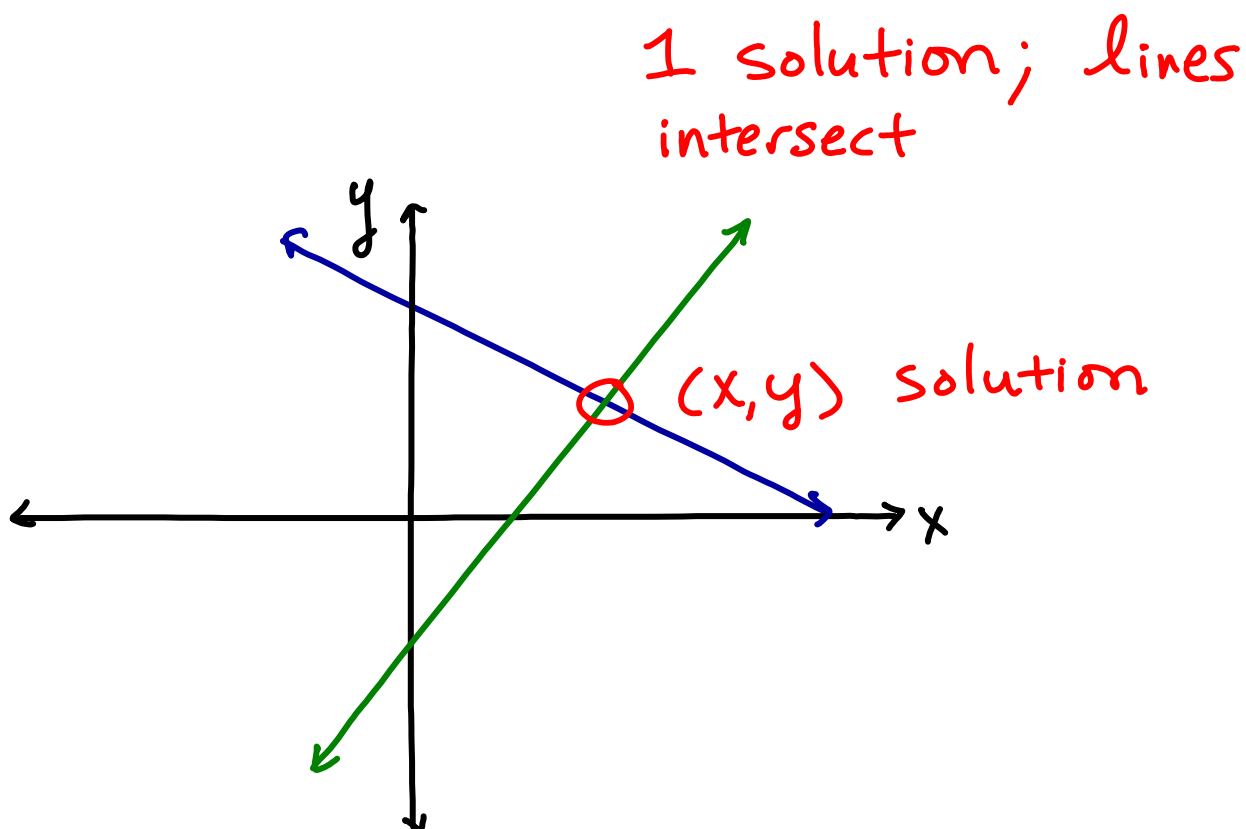


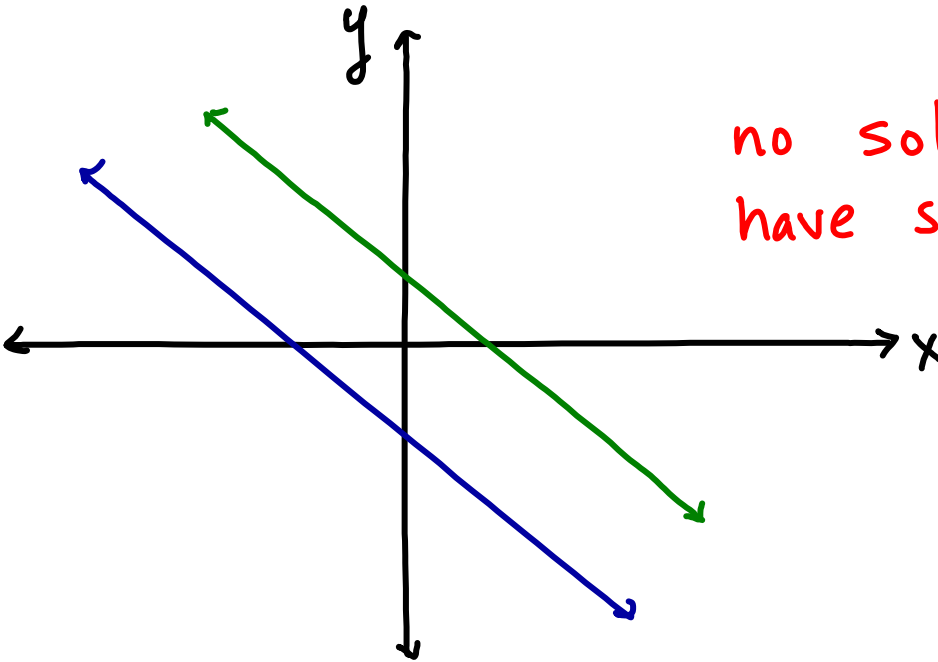
Overview of problems- KEY



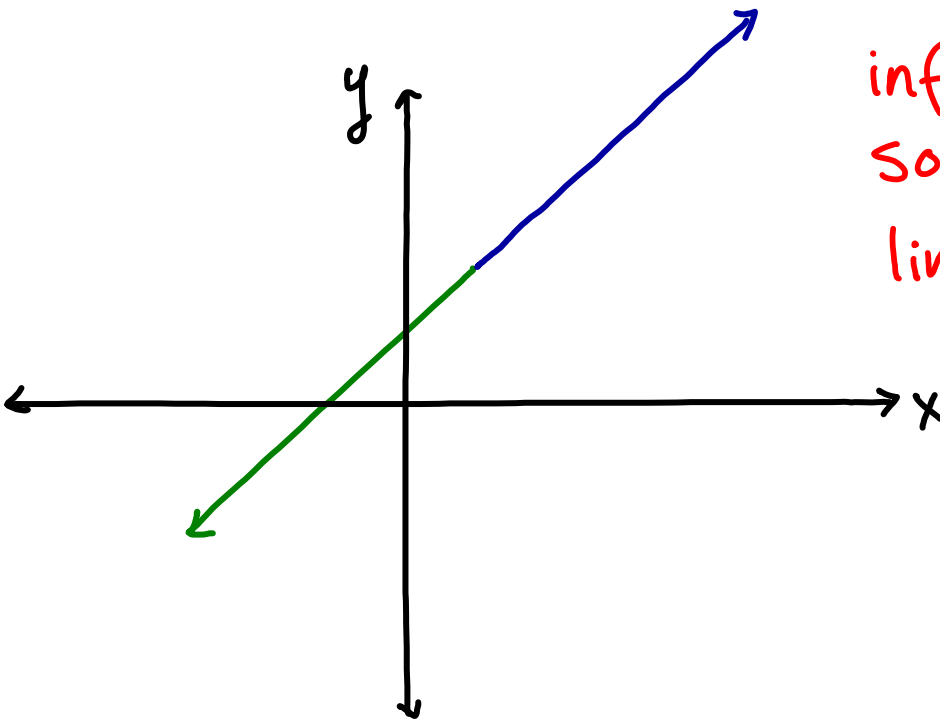
Example Set: A

Given the graph of the system describe its solution and equations





no solution; lines
have same slope



infinite (many)
solutions;
lines are same



Example Set: B

Prove that the system has no solutions (inconsistent)

$$\begin{cases} y = 2x - 3 \\ y = 2x + 1 \end{cases}$$

↑ ↑
slope y-int

lines have same slope,
different y-intercepts —
they can never intersect
(no solution)

$$\begin{cases} 4x + y = 1 \\ 8x + 2y = 9 \end{cases} \begin{matrix} \longrightarrow y = -4x + 1 \\ \longrightarrow y = -4x + 9/2 \end{matrix}$$

lines have same slope,
different y-intercepts —
they can never intersect
(no solution)

Prove that the system has many or infinite solutions
(dependent)

$$\begin{cases} y = \frac{1}{2}x - 4 \\ 2y = x - 8 \end{cases} \rightarrow y = \frac{1}{2}x - 4$$

same lines; infinite solutions

$$\begin{cases} 3x + 2y = -1 \\ \frac{-6x}{-2} - \frac{4y}{-2} = \frac{2}{-2} \end{cases} \rightarrow 3x + 2y = -1$$

same lines; infinite solutions