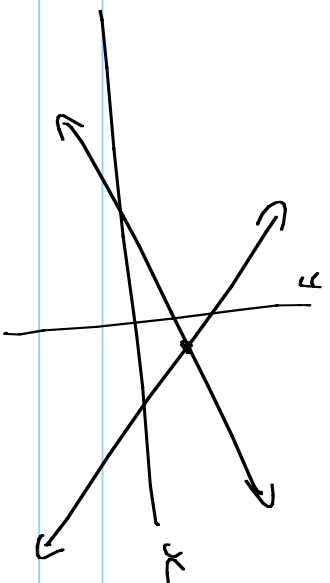


SOLUTIONS OF LINEAR SYSTEMS

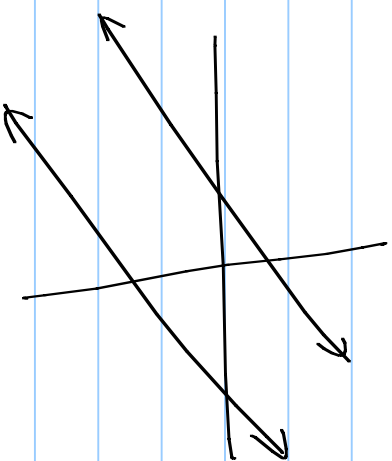
- MULTIPPLY BOTH SIDES OF A LINEAR EQUATION BY A CONSTANT DOES NOT CHANGE THE SOLUTION
- ADDING OR SUBTRACTING EQUATIONS OF A LINEAR SYSTEM DOES NOT CHANGE THE SOLUTION.

POSSIBLE SOLUTIONS TO A LINEAR SYSTEM

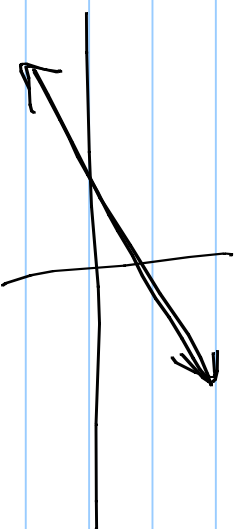
ONE SOLUTION - LINES INTERSECT AT ONLY ONE POINT



NO SOLUTION - LINES ARE PARALLEL



FINITE SOLUTIONS - COINCIDENT LINES



THE GIVEN $x + 2y = 3$ FIND EQUATIONS WHICH
WILL GIVE a) ONE SOLUTION b) ZERO SOLUTIONS
c) INFINITE (∞) SOLUTIONS

SOLN a) ANY EQUATION IN WHICH THE LEFT SIDE
IS NOT A MULTIPLE OF THE LEFT SIDE OF
THE ORIGINAL EQUATION

BE ORIGINAL $x + 2y = 3$

DON'T DO !! $2x + 4y = 3$ \times

$x - 2y = 3$ ✓

$$x + 3y = 3 \quad \checkmark$$

(CHANGE ORIGINAL TO $y = mx + b$ AND THEN CHANGE THE SLOPE \Rightarrow DIFFERENT m)

B) ZERO SOLUTIONS - MULTIPLY EITHER SIDES OF THE ORIGINAL EQUATION WITH A NON-ZERO CONSTANT

IS $x + 2y = 3$

$$7x + 14y = 3$$

(SAME m , DIFFERENT b)

C) ∞ SOLN'S - MULTIPLY BOTH SIDES BY

A NON-ZERO CONSTANT

$$DE \quad x + 2y = 3$$

$$4x + 8y = 12$$

(Same m , Same b)

HLW Pa $454 \# 1-4, 6, 11, 12$