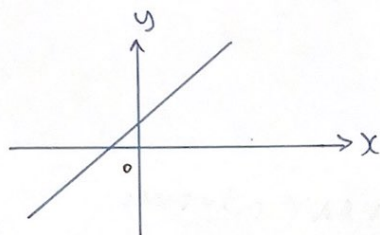


Example 3: Infinitely many solutions

$$4x - 2y = 1$$

$$16x - 8y = 4$$



* Lines coincide with one another!

INFINITE SOLUTION.

HOMOGENOUS LINEAR SYSTEM

Remember what was mentioned about Homogenous Linear Systems beforehand?

Given System

$$a_{11}x_1 + a_{12}x_2 + a_{13}x_3 + \dots + a_{1n}x_n = b_1$$

$$\vdots$$

$$a_{m1}x_1 + a_{m2}x_2 + a_{m3}x_3 + \dots + a_{mn}x_n = b_m$$

If $b_1 = b_2 = \dots = b_m = 0 \rightarrow$ HOMOGENOUS LINEAR SYSTEM

A homogenous linear system is a CONSISTENT equation!

$x_1=0, x_2=0, x_3=0, \dots, x_n=0$ is a solution to the system

Such solution are also termed as TRIVIAL solutions.

Note: Homogenous System of equations can have:

- ONLY ONE SOLUTION $\rightarrow$ the trivial solution
- Infinitely many solutions, together with the trivial solution.