

Lecture 1: Introduction

$$a_1x + a_2x_2 + \dots + a_nx_n = b$$

variables
constant/
numbers
coefficients

The diagram shows a linear equation $a_1x + a_2x_2 + \dots + a_nx_n = b$. The terms a_1x , a_2x_2 , ..., a_nx_n are grouped together and labeled 'variables'. The term b is labeled 'constant/numbers'. The coefficients a_1 , a_2 , ..., a_n are grouped together and labeled 'coefficients'.

e.g. $2x + y - 8z = 10$

$$-x_1 + \pi x_3 - \sqrt{2}x_4 = 0,007$$

$$2x - y + b = 13 - 4x$$

bad examples

$$\sqrt{x} + \gamma y = w z - 10$$

cannot do these

Solution to an equation is
a value for each variable that
makes the equation true

e.g. $x=3, y=4, z=-5$

$$x - 4y - 6z = 17$$

test $(3) - 4(4) - 6(-5) = 17$

$$17 = 17$$

thus a variable solution

System of linear equations

- collection of one or more linear equations
- solution for a system of linear equations - true when plugged in for all equations
- solutions are written as ordered tuples (s_1, s_2, \dots, s_n)

