

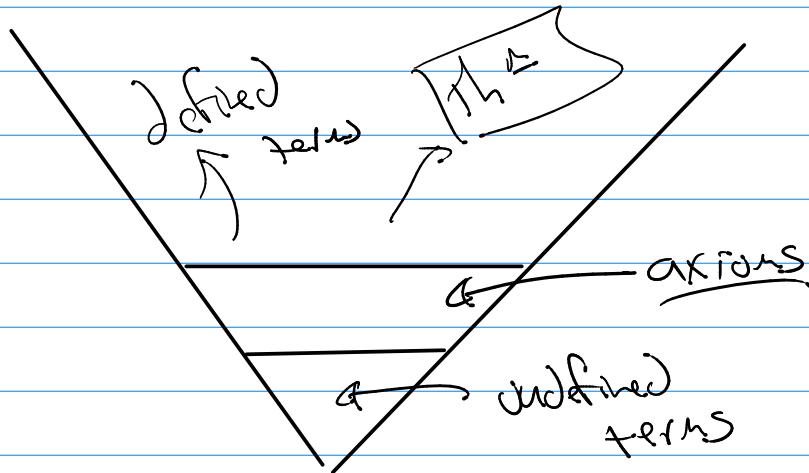
Math 551

Pre reqs

Math = toys + rules

Maths

Axiomatic Method



Arithmetik

toys = 1, 2, 3, π , e, -5

rules = +, -, \times , \div , a/b, a^b

Algebra

toys = variables x , number
functions, inverse functions

trig

Calculus (1, 2)

Linear Algebra

topics \rightarrow Matrix?

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \end{bmatrix}$$

vectors?

$$\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$$

$$[1 \ 2 \ 3 \ 4]$$

rules: "vector" add, subtraction, idea of "multiply"

Solve:

$$\begin{cases} 3x - y = 2 \\ x + y = 5 \end{cases}$$

system of linear equations

consistent

(1) has a soln \rightarrow one soln
 \rightarrow ∞ solns

inconsistent

(2) no soln

Solve

$$\begin{cases} 3x - 5 = 2 \\ x + y = 5 \end{cases}$$

$$y = 5 - x$$

by substitution
or by elimination

$$3x - (5 - x) = 2$$

$$4x = 7$$

$$x = \frac{7}{4} \quad y = 5 - \frac{7}{4} = \frac{13}{4}$$

$$\begin{cases} 3x + y = 2 \\ x - y = 5 \end{cases} \rightarrow \text{augmented} \\ \text{matrix} \quad \underline{\underline{\begin{bmatrix} 3 & 1 & | & 2 \\ 1 & -1 & | & 5 \end{bmatrix}}}$$

\rightarrow equivalent systems \equiv systems of same variables
and same solutions

$$\begin{cases} x + y = 5 \\ y = 1/4 \end{cases} \xrightarrow{\text{same}} \begin{cases} 3x - y = 2 \\ x + y = 5 \end{cases}$$