

April 1st

Theorem/There are infinitely many prime numbers.

proof/ Assume not. $\{p_1, \dots, p_n\}$

$$N = (p_1 \cdot \dots \cdot p_n) + 1$$

$N > p_i$ N is not divisible by p_i
Contradiction! $\square$

Human: This is a proof.
I am convinced!
SOCIAL OBJECT

- Auto. check a proof.
- Auto. search proof space

Jan - March:
Satisfiability

$(P \vee Q) \leftarrow$ Find an instance
"or"

Now: Validity
 $(X \wedge Y) \Rightarrow X$ All instances

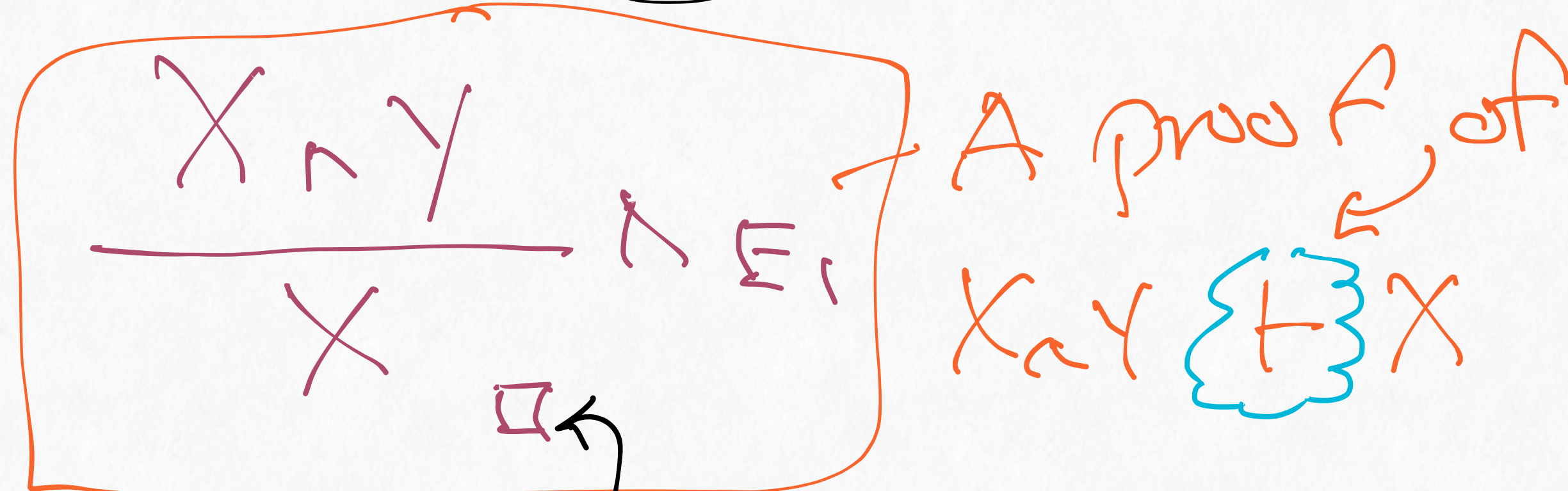
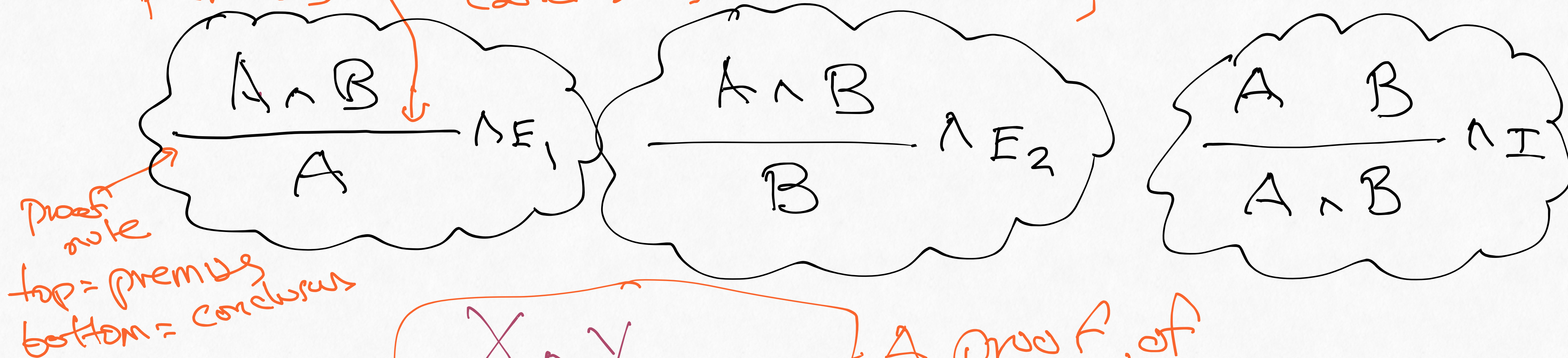
(Sat)
Search for
CE

(pf)
Search for a
formal proof

Natural Deduction

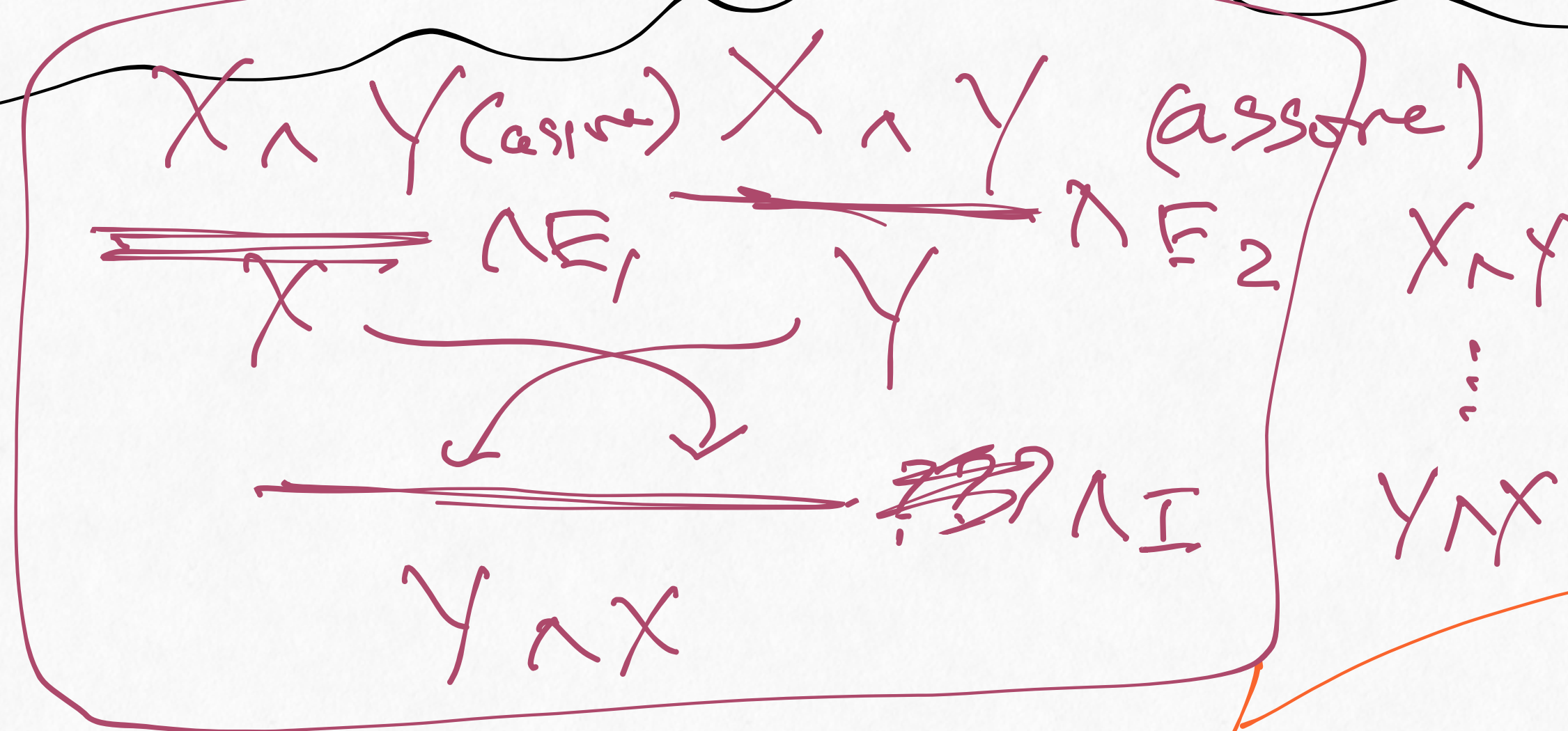
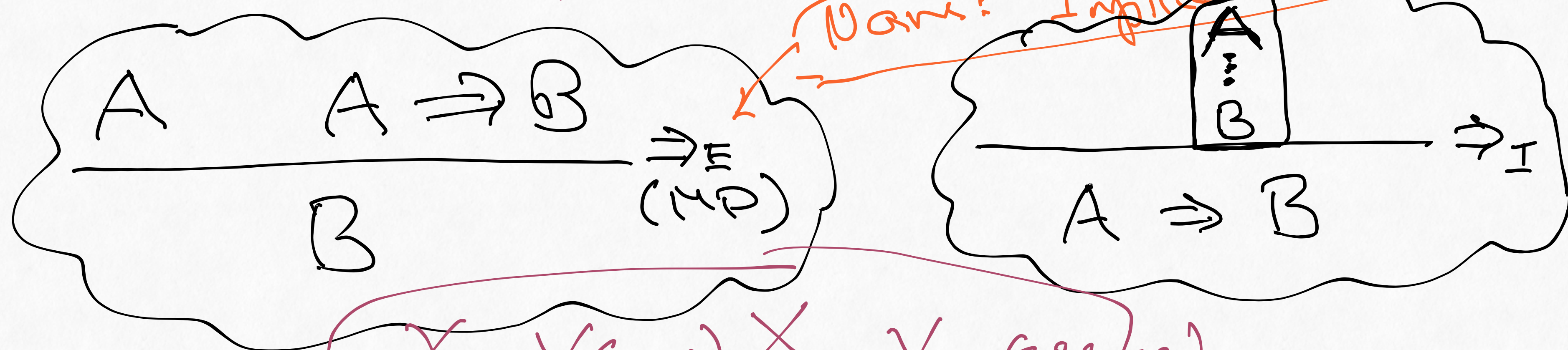
Then $((X \wedge Y) \Rightarrow X)$

"proves" (syntactically, in our deductive system)
premises $X \wedge Y$ conclusion X



Then $((X \wedge Y) \Rightarrow (Y \wedge X))$

logician-speak for "I'm done"
(empty clause) - ... QED



$(X \wedge Y) \Rightarrow (Y \wedge X)$

$\square$

