1. Most fundamental contribution of logic to science?

- not deepest
- not just to mathematics

$\Rightarrow$ The Gödel Completeness Theorem:

$$\text{for first order } \Gamma,\ \theta,$$
$$\Gamma \vdash \theta \quad \Leftrightarrow \quad \Gamma \models \theta$$

definitive answer to:

what follows from what (in science) by logic alone

2. Theory vs applications (to CS)

Great distance - for some time to come

Classical physics

vs

trip to the moon

The logic of programs (recursion)

vs

verification of the airlines reservation system

[specific success]

3. Logic and information

What information?

- The meaning of a sentence θ is the information conveyed by θ

  vs

  The information conveyed by θ is its meaning

- What is the relation between meaning(θ) and meaning(η) if $\theta \vdash^{\star} \eta$ (Different $\vdash^{\star}$)

Which sentences are true

- by virtue of their meaning?
- independently of the facts?
- necessarily?
- by virtue of their form?

$\Rightarrow$ For science:

- sentence: first order
- true . . . : provable

Example: “There is an infinite set”