

Math 303, Fall 2011, Lecture 11

① The symbols of a formal language

(Cohen I.2
(starting on p3))

Cohen talks of two kinds of symbols

and

If we wish to use set theory as a foundation for all
of mathematics then

abbreviations

So, our only special symbol is

And our general symbols are

Note

Note

Notes

①

Cohen also has names for relations
but

②

We gave english intuitive meanings for each symbol
but

③

If you want your language to be finite

eg

$x \in y$

eg

eg The empty set

This is what is meant by an abbreviation

② The syntax of the formal system

Some things I can write with these symbols make sense

Others do not

But

The valid strings are called well formed formulas (wff)

Here are the rules

①

Note:

②

③

④

Note again

Note

eg

eg Are the following well formed? (don't worry about parentheses if it's clear)

$$x = y$$

$$x = y = z$$

$$\forall x (x \wedge y)$$

$$\forall x \exists y \exists z (y = z)$$

③ Next time

- free and bound variables, sentences
- examples
- truth

Read Cohen Ch I sections 2 and 3